ELECTRICAL WEST

WITH WHICH IS CONSOLIDATED
THE JOURNAL OF ELECTRICITY

FEBRUARY 1, 1933

Twenty-five Cents per Copy
McGraw-Hill Co. of Calif.

The Electrified West

Fourteenth Annual Review and Statistical Number

THE IMPROVED GLASS MEANS BETTER PERFORMANCE

The glass now used for the newly designed Hemingray line is an improvement from every angle of insulator service. This glass has made more practical designs possible. It has enabled neater appearing insulators to be developed. Longer service life is a result. Damage from rough handling is less likely. Greater economy is assured.

In developing the completely new line of Hemingray Insulators careful attention was given to proper shape and thickness of petticoats, sharp corners were eliminated, even distribution of mass in the insulator bodies was effected, and construction of the insulators throughout was made heavier. Internal glass strains and stresses are removed by our special manufacturing process. The "heat shock test" given these insulators at the factory subjects them to most severe sudden temperature changes. Being transparent, they are easy to inspect from the ground.

AVAILABLE IN EITHER BROWN OR LIGHT GREEN COLOR

Ratings up to 10,000 volts. Send for samples. Inspect their advantages. Get Bulletin D-1.

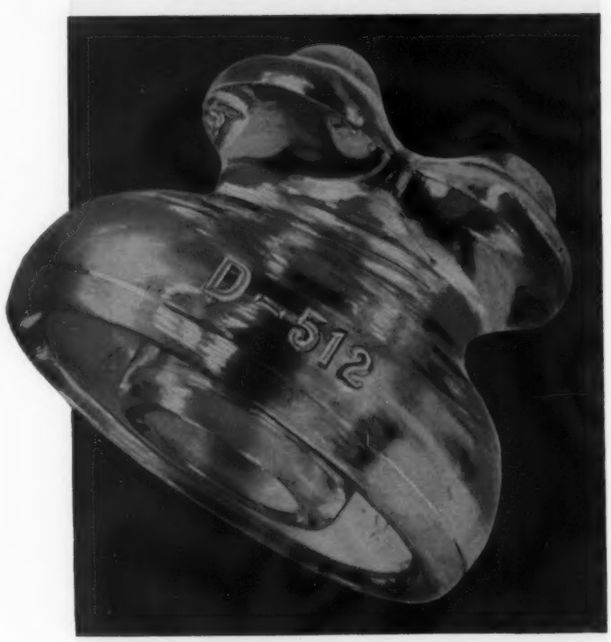
HEMINGRAY GLASS CO.
Muncie, Indiana

HEMINGRAY INSULATORS

FOR PRIMARY AND SECONDARY OUTDOOR DISTRIBUTION NEEDS

THICKER

TOUGHER



STRONGER

ELECTRICAL WEST, entered as second class matter at the post office at San Francisco, under the Act of Congress, March 3, 1879. Published at 883 Mission Street, San Francisco, California, thirteen times a year as follows: January 1, February 1, March 1, April 1, May 1, May 15, June 1, July 1, August 1, September 1, October 1, November 1, and December 1.

ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power & Gas," and the "Journal of Electricity"

Established 1887

McGraw-Hill Company of California

G. C. TENNEY, *Editor*

C. W. LEIHY, *Associate Editor* — W. A. CYR, *Associate Editor* — R. H. FLYNN, *Assistant Editor*

Volume 70 — San Francisco, February 1, 1933 — Number 2

McGraw-Hill Company of California

883 Mission Street
SAN FRANCISCO

SOUTHWEST OFFICE
340 Chamber of Commerce Bldg.
LOS ANGELES, CALIF.

Publishers of

ELECTRICAL WEST

JAMES H. MCGRAW, *Chairman of the Board*
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NEW YORK, 330 West 42nd Street
CHICAGO, 520 North Michigan Avenue
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GREENVILLE, S. C., 1303 Woodside Bldg.

Subscription rate in the United States and possessions, $2 per year, two years $3; Canada, $2.50 per year, two years $4; all other countries, $3 gold (13 shillings), two years, $5. Single copy, 25 cents. When change of address is required, both old and new addresses must be given. Notice must be received two weeks before change takes place.

Member Audit Bureau of Circulations

Associated Business Papers, Inc.

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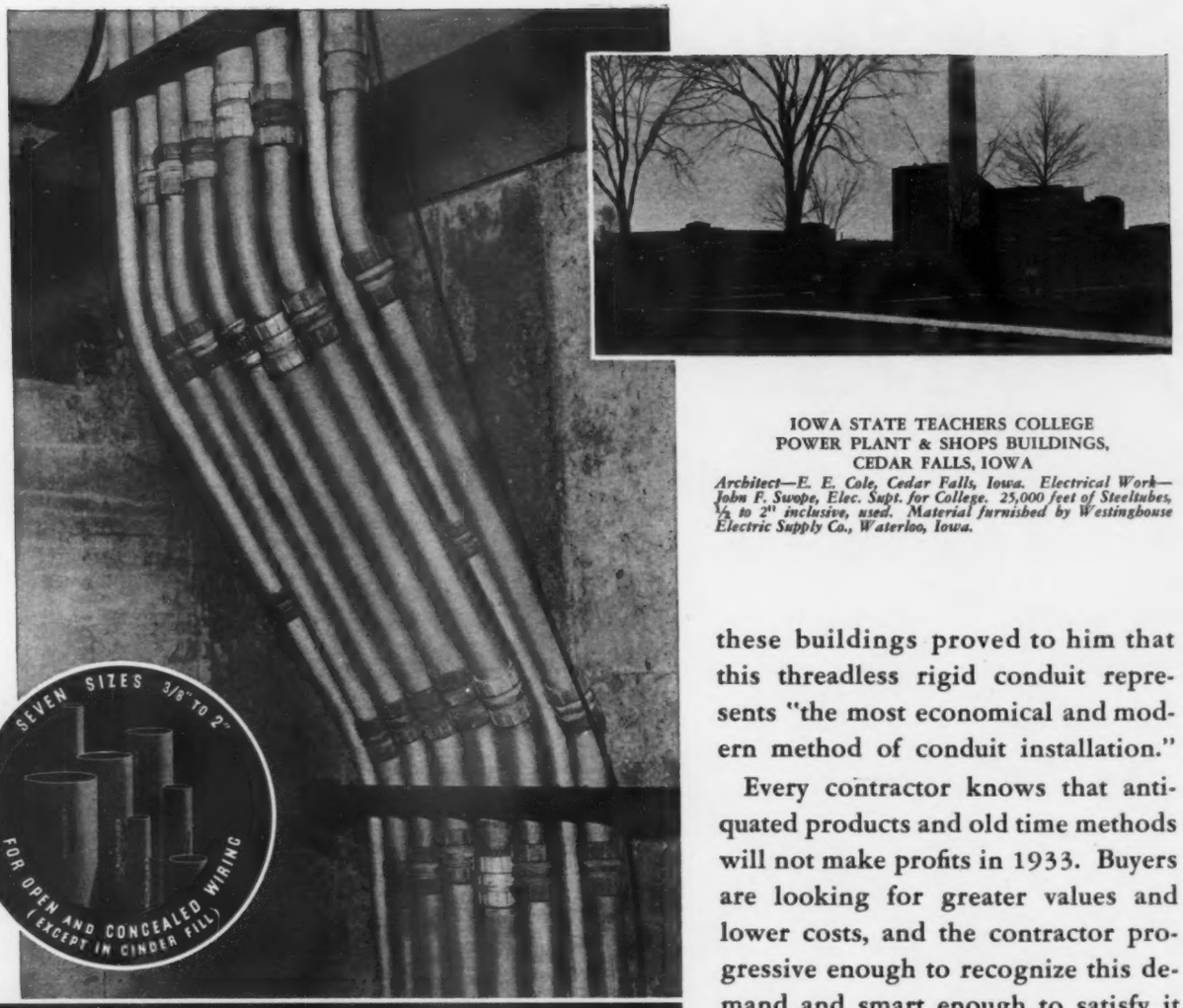
CORNING GLASS WORKS

ANNOUNCES

The PYREX *Suspension Insulator*



IOWA STATE TEACHERS COLLEGE
POWER PLANT & SHOPS BUILDINGS,
CEDAR FALLS, IOWA

Architect—E. E. Cole, Cedar Falls, Iowa. Electrical Work—John F. Swope, Elec. Supt. for College. 25,000 feet of Steeltubes, ½ to 2" inclusive, used. Material furnished by Westinghouse Electric Supply Co., Waterloo, Iowa.

STEELTUBES

"... A STEP FORWARD IN THE ELECTRICAL INDUSTRY"

THESE are not our words. Mr. John F. Swope, Electrical Superintendent, Iowa State Teachers College, Cedar Falls, Iowa, upon completion of the Power Plant and Shops Buildings, in which Steeltubes Conduit was used exclusively in all sizes from ½ to 2-inch, expressed this opinion. The use of 25,000 feet of Steeltubes in these buildings proved to him that this threadless rigid conduit represents "the most economical and modern method of conduit installation."

Every contractor knows that antiquated products and old time methods will not make profits in 1933. Buyers are looking for greater values and lower costs, and the contractor progressive enough to recognize this demand and smart enough to satisfy it will get business—and make money.

Steeltubes—the modern threadless rigid conduit—is a business builder. Light—easy to bend—easy to install—only three simple types of fittings for any job—and no threads to cut. Broad code approval—meets Government specifications.

If you haven't used Steeltubes, let us send you a sample coupled joint. Play with it for three minutes and its profit possibilities will convince you.

ELECTRICAL DIVISION
STEEL AND TUBES, INCORPORATED
World's Largest Producer of Electrically Welded Tubing
CLEVELAND » » « « OHIO
A UNIT OF REPUBLIC STEEL CORPORATION

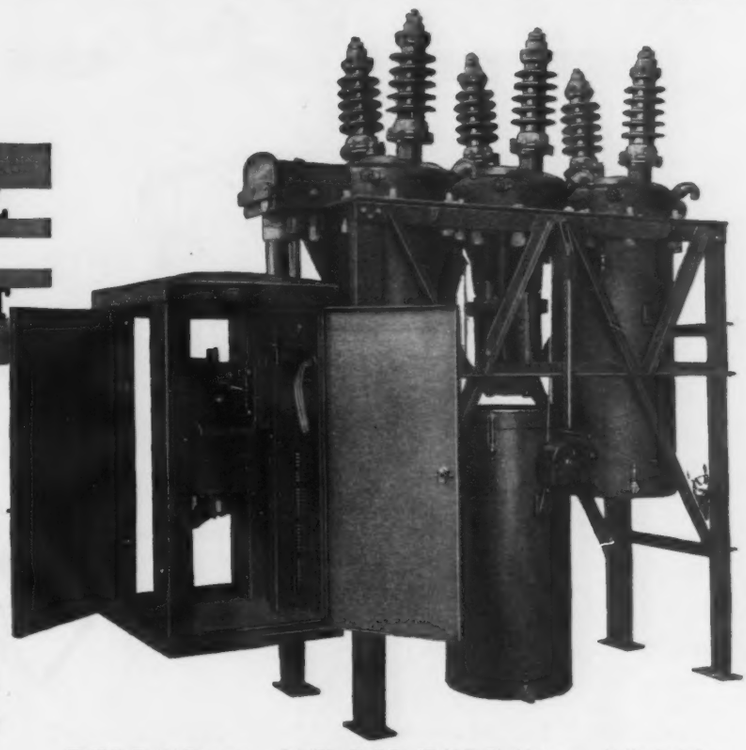
THE MODERN THREADLESS RIGID CONDUIT
Steeltubes

New low-voltage oil-blast breakers

(15,000 to 34,500 volts)

with oil-filled bushings

A BLAST OF OIL AND THE ARC IS OUT



TYPE FHKO-339—OUTDOOR, TYPE FHK-339—INDOOR
600 TO 4000 AMPERES, 500,000 TO 1,500,000 KV-A.

HERE's another line of G-E oil circuit breakers using the oil-blast explosion chamber and employing a new oil-filled bushing of unusually efficient design — a combination that accomplishes much.

What will the oil-blast explosion chamber do? It will give high interrupting ability — fast breaker operation — short arcing time — little contact burning — decreased oil deterioration — and therefore will assure low maintenance, low tank pressure, and consistent performance.

What will the oil-filled bushing do? It will give you the same efficient insulation and excellent service for potentials up to 34,500 volts that the higher-voltage oil-filled bushing has been giving for many years. It is a bushing that you have wanted.

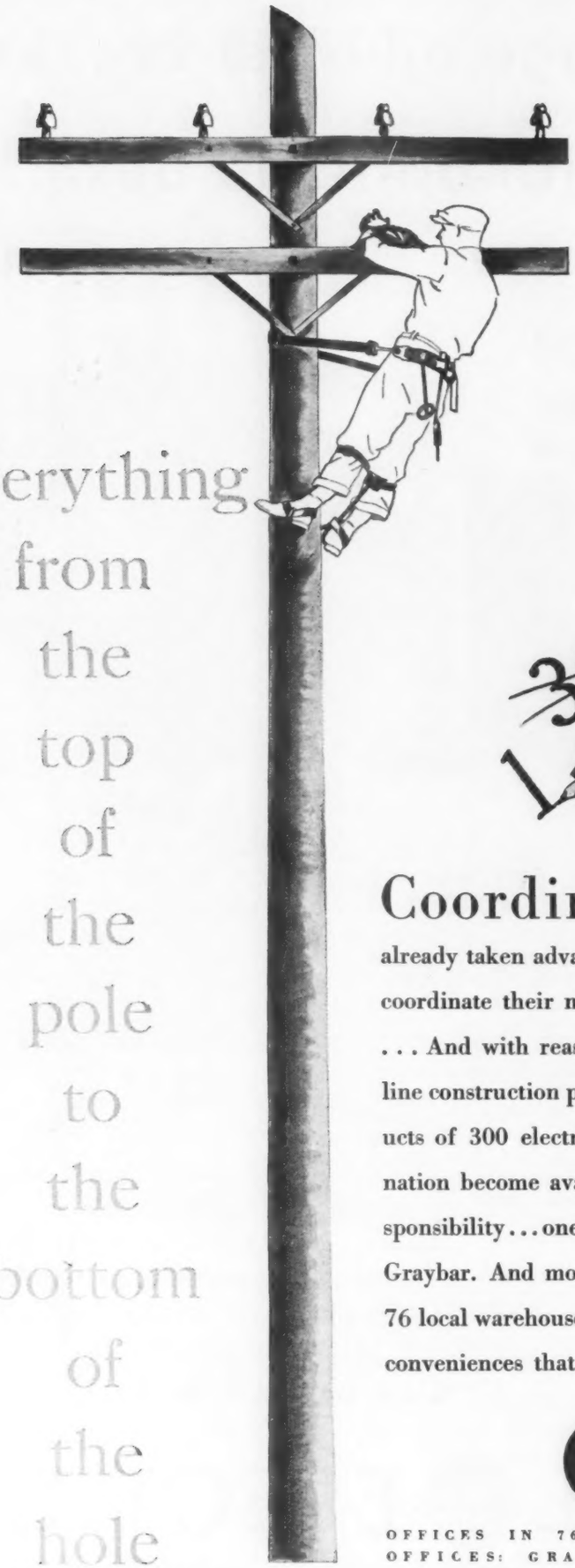
Some of the other important features are:

- Reliable internal mechanism
- Separating chambers to prevent oil throw
- Provisions for emergency vents
- Space economy
- Fast operation
- Low maintenance
- Shipped completely assembled

There are several lines of oil-blast breakers. They cover a range from 5000 to 230,000 volts, and 50,000 to 2,500,000 kv-a. For complete information, address the nearest G-E office, or General Electric Company, Schenectady, N. Y.

470-33

GENERAL ELECTRIC



Everything from the top of the pole to the bottom of the hole

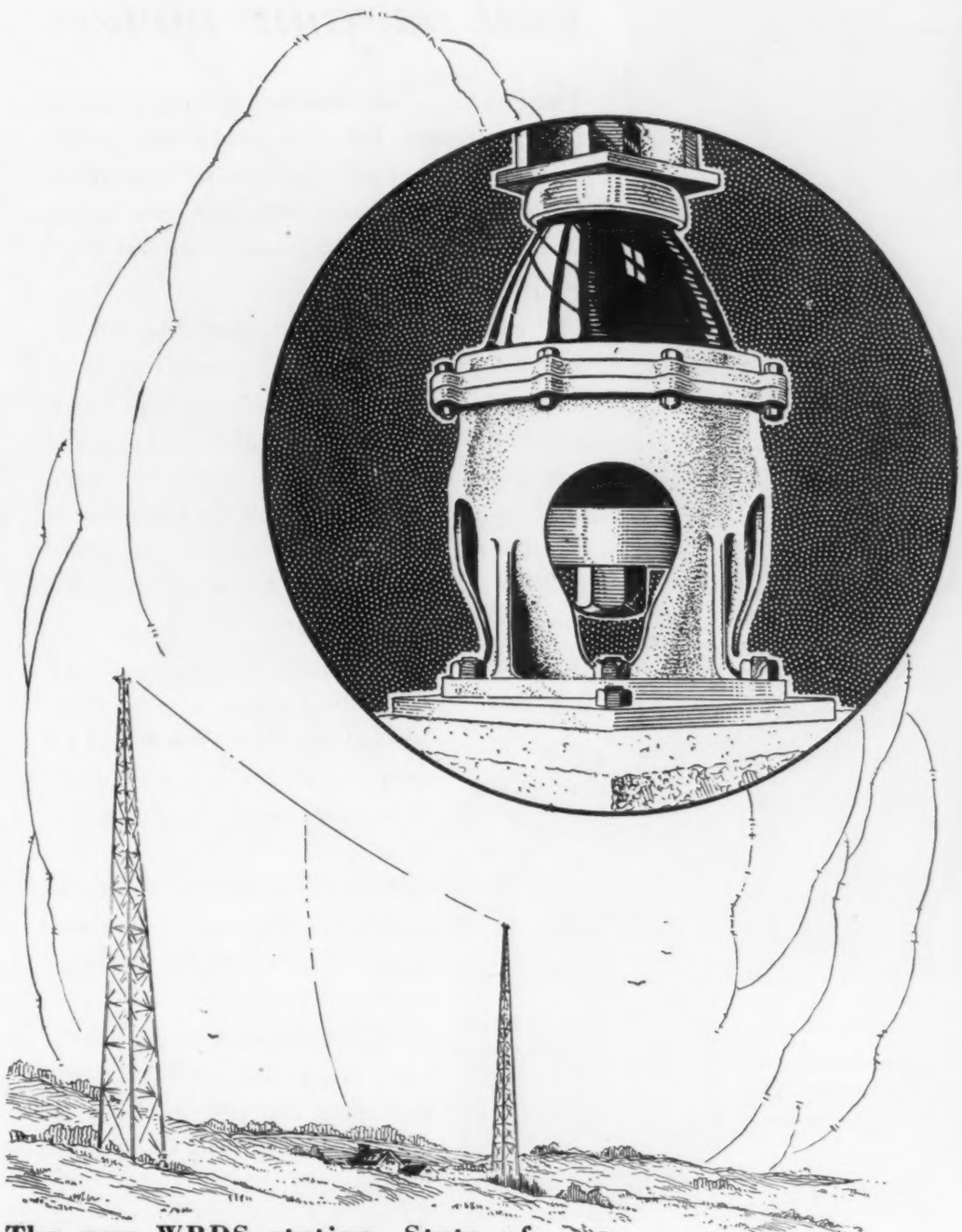
Coordination... Many utilities have already taken advantage of Graybar's service of supply to coordinate their maintenance and construction programs ... And with reason. All the many items that go into a line construction project can be treated as a unit. The products of 300 electrical manufacturers in all parts of the nation become available under *one* Graybar shipping responsibility... one Graybar order... one source of billing, Graybar. And more, too! Graybar's nationwide system of 76 local warehouses makes possible special economies and conveniences that should be of interest to every utility.

GraybaR

OFFICES IN 76 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BLDG., NEW YORK, N. Y.

SAN FRANCISCO SEATTLE LOS ANGELES OAKLAND SPOKANE PORTLAND TACOMA

The first radio stations in this country—as well as many of the most recent—were insulated by Locke.



LOCKE

The new WRDS station, State of Michigan Department of Public Safety, Lansing, Michigan.

GENERAL ELECTRIC SUPPLY CORPORATION., PACIFIC COAST DISTRIBUTOR

Protection...

for your revenues as well as your meters

General Electric protective case enclosing General Electric Type I-16 watthour meter in dwelling-house installation

BECAUSE, in addition to providing years of protection for your watthour meters against the most adverse weather conditions, General Electric's new protective case makes access to the meter impossible without leaving positive evidence.

The case is die-cast of noncorrodible aluminum alloy which excels in strength and durability. If desired, the case can be equipped with a special sealing screw, and glass seal which is practically impossible to duplicate. The space between the meter cover and the box cover is tightly sealed against the entrance of moisture by a thick rubber gasket which is under compression when the case is closed.

Outdoor meter installations are being used more and more extensively both as a precaution against energy diversion and to avoid recalls in meter reading. Therefore, special emphasis has been placed on attractive appearance—a valuable feature in promoting the use of outdoor meter installations for dwelling houses.

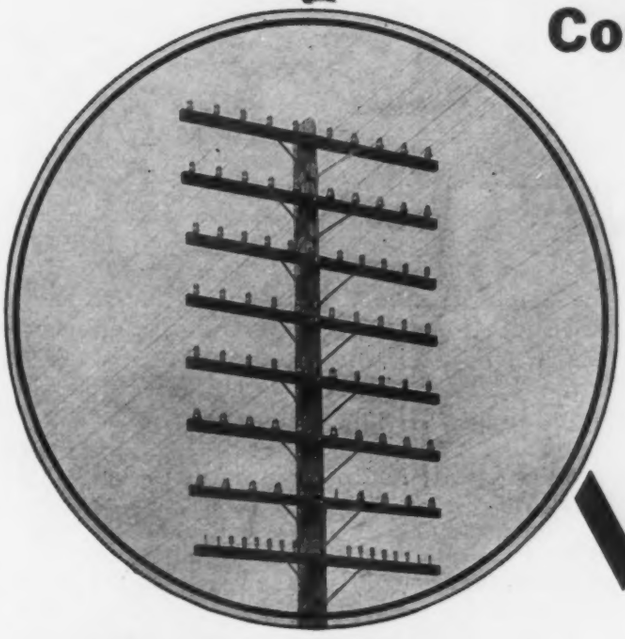
A card to our nearest office will bring you a copy of GEA-1243B describing this new case in detail. General Electric Company, Schenectady, N. Y.

600-45

GENERAL ELECTRIC

This Combination

for Telephone, Telegraph and Low Voltage Lines Will Cut Distribution Costs



McLaughlin Glass Insulators

For many years have been the Pacific Coast "Standard." Their correct design—high flashover value—low first cost—and conveniently located plant all combine to make McLaughlin Glass Insulators economical to use. "A Pacific Coast Product for Pacific Coast Users."

McLaughlin Glass Company
Los Angeles, Calif.

Locust Pins

Won't shrink—won't warp—and resist decay to a remarkable degree. They meet the most rigid specifications. We also make oak brackets and pole steps.

Locust Pin Co.
Front Royal, Va.

MAYDWELL & HARTZELL
INCORPORATED

FACTORY DISTRIBUTORS

LOS ANGELES SAN FRANCISCO

PANCH

IT IS Eastern belief that on the fifth day after the baby's birth—panch, they call it—the goddess of fate enters and marks on the child's forehead its fate during life.

On the four days preceding panch the utmost care is exercised to make everything propitious for a good marking.

With this Propitious Preparatory Period before marking we of Morganite are in full accord—except it is our belief (and our practice) that the period should be weeks rather than days.

Few realize that the simple-appearing Morganite brush you buy represents a *four week* Propitious Processing before being marked with the characteristic Link Mark.

Even though the Morganite plant in Long Island City is one of the most modern in the world, the work of pressing, the work of kilning, the work of graphitizing the EG-12's you use on your generators and high-speed rotaries, the labor of grinding for sizing, of drilling and finishing, and the final close inspection—these all take time and are vitally necessary for the panch, or marking day.

Where utmost in quality is sincerely a manufacturing motive, as with Morganite, speeding up of operations, especially those involving labor, is not propitious for proper brush characteristics.

Remember this when tempted to let your brush stock run low. While we endeavor to maintain sufficient quantities to make immediate shipments, still a sudden surge in demand on a single type might cause some customers to await another panch cycle of production.

Morganite
Brush Co., Inc.
Long Island City, N.Y.

What you want to know

ABOUT UNDERGROUND CONDUIT

How to keep installation costs down
How to reduce maintenance expense
How to avoid out-of-line layings
How to insure tight joints
How to reduce possibility of electrolytic damage . . .

THIS BOOK answers these pertinent and important questions for you. It is written to help every man who buys or uses electric cable for underground installation and who wants to know how to reduce the cost of protecting it.

We've had 40 years' experience making Orangeburg Fibre Conduit — the accepted standard underground conduit . . . 40 years of working in closest coöperation with those engineers and public utility companies who have led in developing underground electric systems. What we've learned by working with the man on the job is in this book. Send for your copy. It may help you avoid unnecessary cost and needless maintenance expense.

The Fibre Conduit Company
ORANGEBURG, N. Y.

THE FIBRE CONDUIT CO. REG. U.S. ORANGEBURG PAT. OFF. ORANGEBURG, N.Y.

SOLE SELLING AGENT

JM PRODUCTS

Johns-Manville
292 Madison Avenue, New York City

HOTPOINT

1 Close-up of one of murals in Electrical Group.

2 Modern illumination on section of Hall of Science

3 Lincoln's early home—one of the "Lincoln Group"

4 Daylight scene Tower of Hall of Science

5 Laughing Buddha in Golden Temple of Jehol

6 Section of Transportation Building

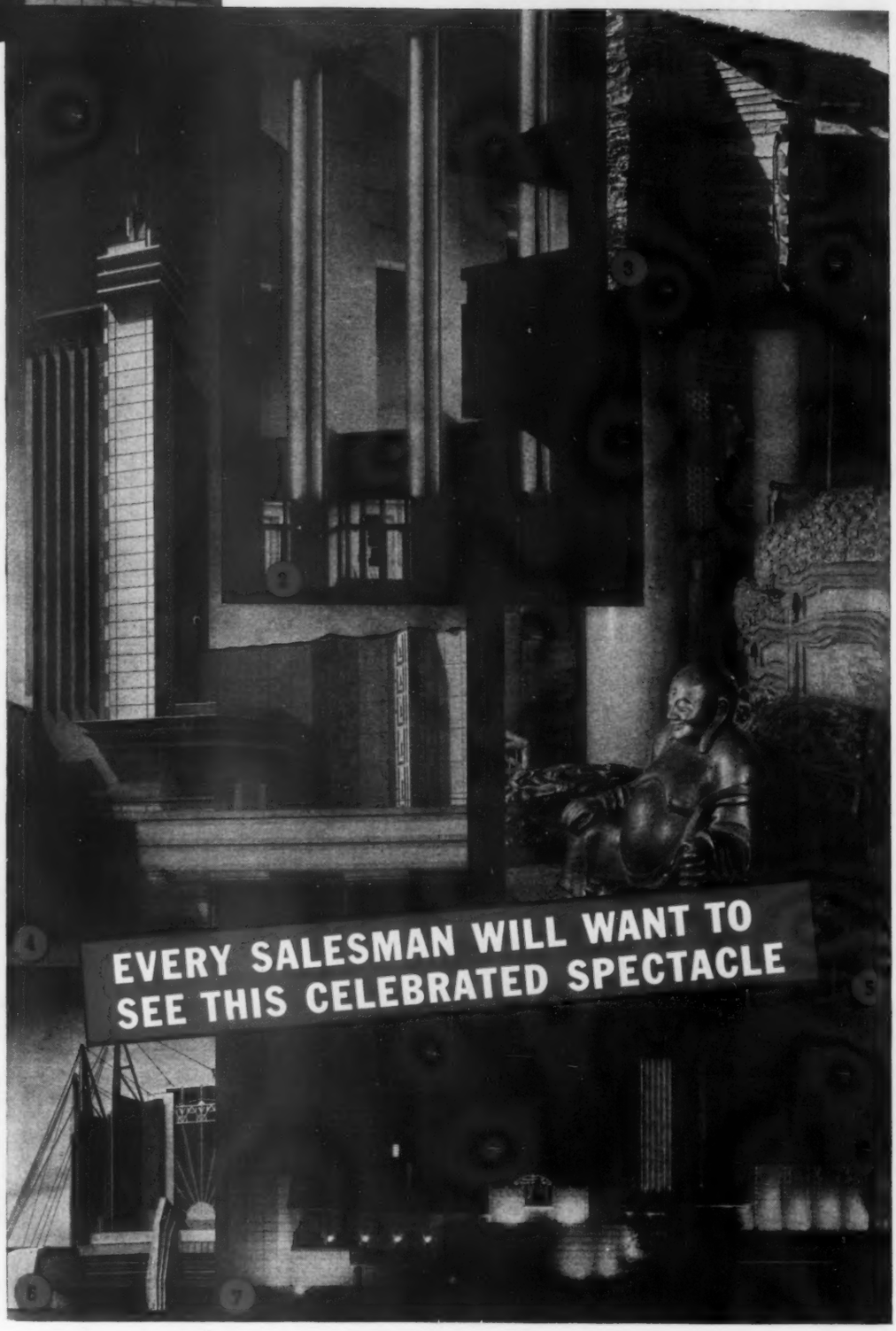
7 Hall of Science Group at night from across lagoon

"ON TO CHICAGO"

a retail salesmen's "once-in-a-lifetime" contest

... starts March 1, and continues to June 30, for utilities and dealers who employ retail range salesmen. Spectacular promotion will be carried on direct from Chicago to enthuse your salesmen. Thousands of retail salesmen will compete for prize trips to the Century of Progress Exposition. It is undoubtedly the most dramatic selling event in electric range history and the greatest method of sales stimulation which can be employed in 1933.

Kaufmann & Fabry photos



ANNOUNCES A "QUARTER CENTURY OF PROGRESS" CAMPAIGN

● Hotpoint steps forward with a new and greater sales plan featuring new line, new prices, a sensational sales contest and many other advantages for 1933. The "On to Chicago" Contest stirs the interest and efforts of every salesman and gives you contest material to keep salesmen's activities and enthusiasm at the peak.

Tie up with Hotpoint's "On to Chicago" Contest. Enjoy maximum sales results during '33. Get full details about our sensational promotion material, the novel and spectacular "scoring" system for salesmen and the plan for awarding, as prizes, trips to the Century of Progress Exposition at Chicago. Contest starts March 1 and runs to June 30, with special provisions for public utility campaigns. Write today.

Hotpoint's selling and distribution methods for 1933 provide for direct representation from the factory. A beautiful new line of Hotpoint ranges, including the "Chicagoan" Table Top model, has just been announced. Write for illustrated folder.

Factory district salesmanagers and range specialists are available to help you plan spring campaigns and work directly with you to insure success of your range activities. Send the coupon now for Hotpoint's new sales plan book, "A Quarter Century of Progress". It describes in detail Hotpoint's dramatic plans for 1933 selling. Edison General Electric Appliance Company, Inc., 5612 W. Taylor Street, Chicago.

HOTPOINT steps ahead with . . .

NEW LINE—Designed right! Built right! Priced right! A complete line of modern Electric Ranges to be sold under the famous name—HOTPOINT.

NEW POPULAR PRICES Prices are down—but Hotpoint quality remains up! Net prices allow a substantial profit for the retailer on every model.

DIRECT FACTORY SALES ASSISTANCE—Hotpoint's experienced and capable District Managers, Range Specialists, Home Economists and Service Men are ready to help you.

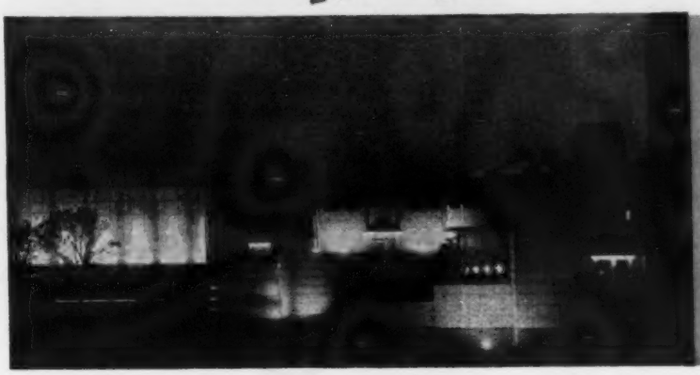
SALES PROMOTION HELPS—Hotpoint offers a complete new set-up in Sales Promotion and Advertising Helps for 1933.

NATION-WIDE RETAIL SALESMEN'S CONTEST The "On-to-Chicago" Contest is a dramatic sales stimulant—a "natural" for 1933.

TRAINING FOR RETAIL SALESMEN— The complete Hotpoint LaSalle correspondence course is available to your own sales organization. In addition to the training course Hotpoint offers retail salesmen's selling equipment, including a new Visual Presentation of Electric Cookery.

WOMAN'S NEW VICTORY · ELECTRIC COOKERY

ELECTRIC Hotpoint RANGES



EDISON GENERAL ELECTRIC APPLIANCE CO., INC.
5612 W. Taylor Street, Chicago

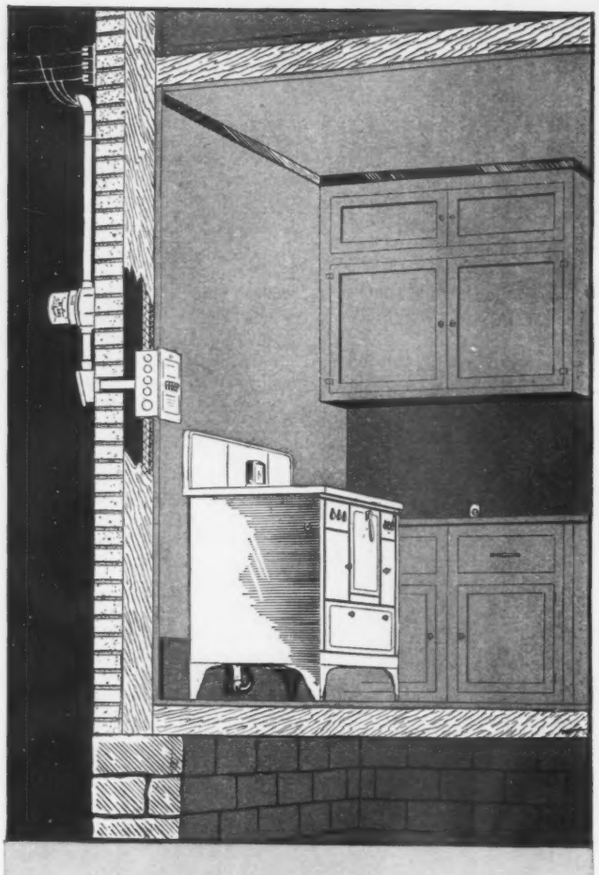
Please reserve for me a copy of your plan book "Quarter Century of Progress."

Name.....

Address.....

City..... *State*.....

TIE *the New Metering System* TO



Installation

The New OC Detachable Meter and the Nofuze Load Center are mounted back-to-back providing the most modern and convenient wiring job for the electrified home.

TO nearly every light and power company, the national electric range campaign introduces a problem of installation costs.

Why not meet this problem by installing the new Westinghouse Metering System with every electric range?

You will have started the modernization of your metering installation . . . modernization that will immediately begin to pay for itself through the many cost-saving features of the combination of the new OC Detachable Meter, the Nofuze Load Center and the portable Stroboscopic Meter Standard.

Ranges will be sold more easily because, in many cases, the installed cost to the consumer with the Nofuze Load Center will be actually lower than with the old-fashioned fused entrance switch.

Your modernization dollars will go from 30 to 50 per cent farther, because the range installation constitutes a considerable part of the metering system.

Some of the definite advantages of the Metering System that assure lower range installation costs are shown on the opposite page.

SEND FOR BOOKLETS

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Gentlemen—Please send me C. 1960, A New Metering System, and C. 1946, Fuseless Protection.

Name .....

Company .....

Title .....

Address ..... *State* ..... EW 2-33

Westinghouse

Quality workmanship guarantees every Westinghouse product

Your Electric Range Campaign

1. Shortens long runs of heavy wiring, the heaviest cost of range installations, by shortening the distance between the load center and the heavy-current consuming range.

2. Eliminates fused entrance switch taking advantage of the new metering sequence.

3. Eliminates the necessity of branch fuses by means of the convenient and absolutely tamper-proof Flipons (small circuit breakers) in the Nofuze Load Center.

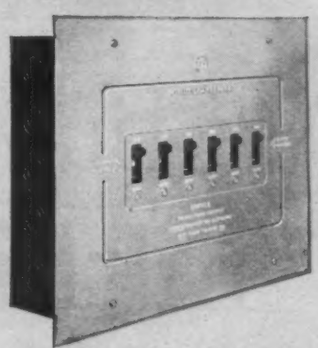
4. Not only provides *adequate wiring capacity* for the new range load, but for all future increases in appliance loads.

And in addition . . . this New Metering System offers other economies and advantages never before attained in metering:

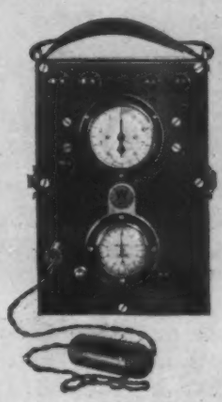
1. Quick, easy, low-cost installation and removal of the OC Detachable Meter—requires no expensive meter box.
2. Reduces possibility of energy diversion.
3. Accessible for reading at all times, saving the expense of return trips for missed meter readings.
4. Makes meter testing and calibration in the field as simple as setting a timepiece.
5. Assures initial and sustained accuracy, registering fully the smallest loads, such as electric clocks, without neglecting the increasingly important heavy loads of ranges and other large-current consuming devices.
6. Saves thousands of dollars yearly in reduced service costs for fuse replacement.

For complete information about this New Metering System and its many advantages, simply mail the coupon on the opposite page.

New OC Detachable Meter



Nofuze Load Center



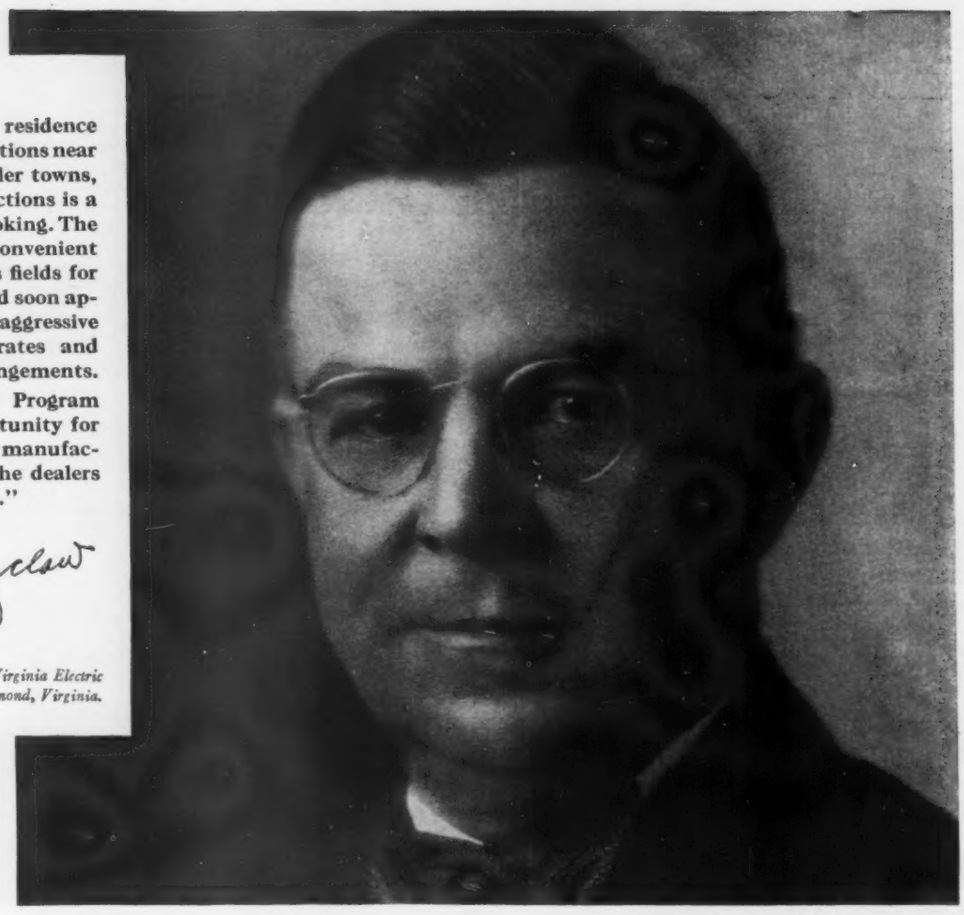
New Portable Stroboscopic Meter Standard

"Almost every residence in these large suburban sections near our cities and in the smaller towns, communities and rural sections is a live prospect for electric cooking. The availability of no other convenient fuel makes of these places fields for electric cookery that should soon approach saturation with aggressive promotion, satisfactory rates and reasonable financing arrangements.

"The Electric Cookery Program affords a wonderful opportunity for the co-operation of the manufacturers, the utilities and the dealers to accomplish this big job."

J. G. Hoffheimer

President, Virginia Electric and Power Co., Richmond, Virginia.



YOU have a *Vital Interest* in this BIG JOB

OFFERING new sales possibilities to dealers, new wiring jobs to contractors—*and a stabilized and increased volume of energy sales to you,* electric cookery is here to stay.

For it is already an established and proved success in over a million homes. To millions more it offers a *truly modern* means of cooking.

Our job is to convert that powerful, latent demand into actual business—*now!*

. . .

Selling the idea of electric cookery is a big job. It can't be done overnight. It can't be done effectively without the support of a national co-operative campaign to co-ordinate all promotional efforts.

Local organization is essential, but without *you* no Local Electric Cookery Council can function.

Join now with your department stores, hardware stores, furniture stores, contractors and all other natural outlets for electric ranges. With them and the help of your divisional director and local operating sponsor, get your own Local Council operating. Make mutual co-operation and "profits for all" the basis of all local range activities.

The national advertising is already prepared. It will not be released until a sufficient group of Local Electric Cookery Councils (having a substantial number of dealer outlets) has been organized to cash in on the business it will create for us all. Your action will determine when this advertising gets under way.

For further co-operation and assistance, address your inquiries to the National Electric Cookery Council, 420 Lexington Avenue, New York City.

NATIONAL ELECTRIC COOKERY COUNCIL

ELECTRICAL WEST

With which is consolidated the Journal of Electricity
McGraw-Hill Company of California

San Francisco, Feb. 1, 1933

Volume 70
Number 2

G. C. TENNEY, *Editor*

Rx

DIAGNOSIS precedes prescription—this is a fundamental truth in business and engineering as well as in medicine. Necessary for a critical diagnostic scrutiny is an assembly of facts, a case history on which to base sound judgment. In the pages which follow are assembled the facts, developments and trends of the electrical industry of the Far West for 1932 and for preceding years. Interpreted and applied, they offer the basis for a prescription for the future.

Elementary facts regarding the economic place of the electrical industry in this territory have not been altered by three troublous years. As one index after another sank to new low levels, electric power continued to demonstrate its increasingly indispensable place in modern civilization, even to the point where it is embraced by "technocrats" as the currency of a new social order.

Twelve months ago it was written on this page: "Here is an industry with markets limited only by the genius of its research workers, the ability of its correlated branches to sell and the capacity of the public to absorb the services which it offers." Nothing has occurred in 1932 to alter that opinion. Research has continued unabated, with promise of future electrical achievements as spectacular, as utilitarian and as profitable to the industry and public alike as anything in the past.

Stress and experience have revealed weaknesses in the industry's salesmanship that require correction. Today's market possibilities, running into the billions, present a challenge for a real display of sales ability. Cooperation, teamwork and internal understanding must be coupled with definite programs for electrifying the country's homes, factories, stores and farms. Perhaps the greatest need of the electrical industry today is some of that merchandising genius which placed 22,000,000 automobiles on the streets and highways of America in less than thirty years. And this without such sales arguments as more leisure, more comfort, more convenience, more happiness and less drudgery —all of which apply to electricity and the multiplicity of modern servants which it commands.

As to the capacity of the public to obsorb these services, here again the industry has a part to play. If the return of national prosperity depends upon deflation of the costs of government, the industry can work toward that end. Furthermore, it can resolve to keep an open mind toward all those problems—both international and domestic—on the solution of which economic upturn depends. It can cooperate in any program designed to promote higher standards of living and greater stability of employment and income.

Opportunity for individual or corporate reward, either monetary or from the standpoint of public service, still exists in the electrical industry—will continue to exist for many years to come. Nothing happened in 1932 to dim either courage or optimism. Nor is there any serious obstacle on the horizon for 1933. The electrical industry has not yet suffered from any ailments which were too obstinate for diagnosis and for which a prescription has not been found. And the prescription for 1933 appears to be—fact-facing and hard work.

"Almost every residence in these large suburban sections near our cities and in the smaller towns, communities and rural sections is a live prospect for electric cooking. The availability of no other convenient fuel makes of these places fields for electric cookery that should soon approach saturation with aggressive promotion, satisfactory rates and reasonable financing arrangements.

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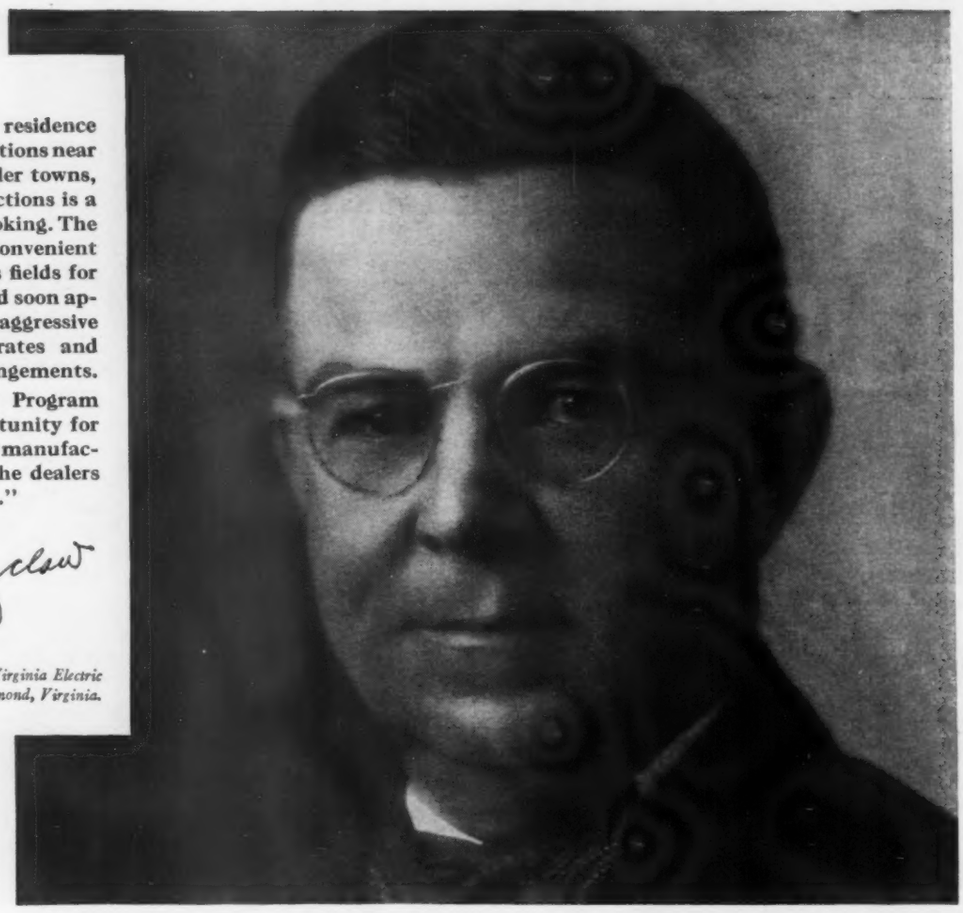

YOU have a *Vital Interest* in this BIG JOB

OFFERING new sales possibilities to dealers, new wiring jobs to contractors—*and a stabilized and increased volume of energy sales to you*, electric cookery is here to stay.

For it is already an established and proved success in over a million homes. To millions more it offers a *truly modern* means of cooking.

Our job is to convert that powerful, latent demand into actual business—*now!*

. . .

Selling the idea of electric cookery is a big job. It can't be done overnight. It can't be done effectively without the support of a national co-operative campaign to co-ordinate all promotional efforts.

Local organization is essential, but without *you* no Local Electric Cookery Council can function.

Join now with your department stores, hardware stores, furniture stores, contractors and all other natural outlets for electric ranges. With them and the help of your divisional director and local operating sponsor, get your own Local Council operating. Make mutual co-operation and "profits for all" the basis of all local range activities.

The national advertising is already prepared. It will not be released until a sufficient group of Local Electric Cookery Councils (having a substantial number of dealer outlets) has been organized to cash in on the business it will create for us all. Your action will determine when this advertising gets under way.

For further co-operation and assistance, address your inquiries to the National Electric Cookery Council, 420 Lexington Avenue, New York City.

NATIONAL ELECTRIC COOKERY COUNCIL

ELECTRICAL WEST

With which is consolidated the Journal of Electricity
McGraw-Hill Company of California

San Francisco, Feb. 1, 1933

Volume 70
Number 2

G. C. TENNEY, *Editor*

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DIAGNOSIS precedes prescription—this is a fundamental truth in business and engineering as well as in medicine. Necessary for a critical diagnostic scrutiny is an assembly of facts, a case history on which to base sound judgment. In the pages which follow are assembled the facts, developments and trends of the electrical industry of the Far West for 1932 and for preceding years. Interpreted and applied, they offer the basis for a prescription for the future.

Elementary facts regarding the economic place of the electrical industry in this territory have not been altered by three troublous years. As one index after another sank to new low levels, electric power continued to demonstrate its increasingly indispensable place in modern civilization, even to the point where it is embraced by "technocrats" as the currency of a new social order.

Twelve months ago it was written on this page: "Here is an industry with markets limited only by the genius of its research workers, the ability of its correlated branches to sell and the capacity of the public to absorb the services which it offers." Nothing has occurred in 1932 to alter that opinion. Research has continued unabated, with promise of future electrical achievements as spectacular, as utilitarian and as profitable to the industry and public alike as anything in the past.

Stress and experience have revealed weaknesses in the industry's salesmanship that require correction. Today's market possibilities, running into the billions, present a challenge for a real display of sales ability. Cooperation, teamwork and internal understanding must be coupled with definite programs for electrifying the country's homes, factories, stores and farms. Perhaps the greatest need of the electrical industry today is some of that merchandising genius which placed 22,000,000 automobiles on the streets and highways of America in less than thirty years. And this without such sales arguments as more leisure, more comfort, more convenience, more happiness and less drudgery—all of which apply to electricity and the multiplicity of modern servants which it commands.

As to the capacity of the public to obsorb these services, here again the industry has a part to play. If the return of national prosperity depends upon deflation of the costs of government, the industry can work toward that end. Furthermore, it can resolve to keep an open mind toward all those problems—both international and domestic—on the solution of which economic upturn depends. It can cooperate in any program designed to promote higher standards of living and greater stability of employment and income.

Opportunity for individual or corporate reward, either monetary or from the standpoint of public service, still exists in the electrical industry—will continue to exist for many years to come. Nothing happened in 1932 to dim either courage or optimism. Nor is there any serious obstacle on the horizon for 1933. The electrical industry has not yet suffered from any ailments which were too obstinate for diagnosis and for which a prescription has not been found. And the prescription for 1933 appears to be—fact-facing and hard work.

Business in 1933

EVEN IF 1932 was a commercial nightmare, it was not without some sane moments that occasion hope for 1933. Although there were companies and individuals last year who retreated rather than resist, there were those who fought every inch of the way. These latter found themselves holding their own and, on some fronts, even making slight gains. Most encouraging is that their determination to continue to seek business and build load assures the industry of courageous leadership and example in 1933.

From the bottom, looking up, the outlook is better for 1933. The first appliance prices have been raised. Others must follow or quit. The lamp companies and the trade have become militant in protecting lighting from shyster devices and foreign dumping. None of the Western power companies have completely withdrawn from merchandising, so they still retain the real opportunity to show that load building can be done in a manner profitable to all branches of the industry. Awakened to competitive cooking and power menaces, the industry no longer is complacent, but is intent upon holding and adding to these loads. The national refrigeration program is a going concern and the national range program has been launched. Industrial business is scarce, but ingenuity is developing more small uses to replace piecemeal the large blocks that have been falling off the line.

Along with salesmanship, chief needs for 1933 are a general housecleaning, and a tongue-washing, too, of business ethics and trade policies. The industry needs, as much as markets or money, men with the fortitude to square up to honest policy and fair dealing.

Business must revive itself in 1933, and that goes for the electrical industry. Along with this self-regeneration, let there be a revival of sound principles.

Manufacturing in 1933

A $51 billion electrical market exists in the United States, according to "Electrical World," if a reasonable degree of electrification is to be attained. It's heartening to learn that there is a market, and that it is so large.

Manufacturers make good products for that market, and are improving them constantly. Perhaps a little re-styling, a few changes here and there, are advisable, but, substantially, the products are as sound as the market is large. All that is lacking is the ability and the inclination of the public to buy.

Of course, before the manufacturer can hope even to survive, prices must be stabilized, chiseling eliminated, distributive channels strengthened and the industry welded into a compact, aggressive unit. All that is primer stuff; when accomplished, the real problem still remains—to build a consumption.

Creative selling will solve part of the problem—that part represented by those who have money and need to be sold. But if a great percentage of the people earn less, they must buy less. So a great part of the problem is to make it possible for this latter group to buy. Either they must earn more or the products must cost less.

Prices have fallen as low as possible under present conditions; perhaps too low. In many cases, no further reductions are economically possible. With labor and material costs as low as they may ever become, the only field for cost reduction is that of distribution, the cost of bringing the product from manufacturer to consumer.

How will these reductions be made? One important step would be the abolition of services and facilities which duplicate those of the wholesaler and retailer. Another would be a sales program flexible enough to allow the adoption of the sales methods economically best suited to any territory.

Does this mean a complete new system or a revamping of a present one? That must be worked out. It is a big problem, but the solution of the big problem may mean a return to big profits.

Wholesaling in 1933

WITH the entire machinery of distribution faced with investigation and scrutiny during 1933 to determine the economic justification of each part, the electrical wholesaler serving the far Western states has this satisfaction: Irrespective of the decision reached regarding the necessity for the wholesaler in other parts of the country, he is a vitally necessary link in the distributive chain in so far as this territory is concerned. Time, distance, isolation and, to a marked degree, mental and economic autonomy preclude his elimination and justify his existence.

This fundamental fact should not lure the wholesalers of the Pacific Coast into any false sense of security. Their problems are legion, starting with the serious one of balancing 1933's budgets and ending with revisions in the basic laws governing the conduct of all business. Here are but a few of them:

More serious consideration must be given to selective selling, because the wholesaler knows that a few strong retail outlets are better than a myriad of weak ones. Understanding is necessary between manufacturers, contractors and wholesalers, which will permit a sharp delineation of industrial customer classification so that waste and duplication in selling effort may be eliminated.

Thought must be given to diversification so that volume of business will not depend solely upon the cyclical eras of building construction. Consideration of the relationship between wholesaler, manufacturers' agent and manufacturers' branch, as regards service, stocks and sales responsibility, is essential. Markets and merchandising need study so that the wholesaler may better serve his retailers. Finally, thought must be given to revision of the credit laws so that the heavy cost of business failures need not be shouldered by those who are successful.

In the next few months there will emerge from the turmoil of more than three trying years those business units which will be vital and enduring. It is safe to predict that the electrical wholesaler in the Pacific Coast states will be one of them.

Construction in 1933

WIRING—electrical construction—the contractors', the wiremen's, even the supply jobbers', staff of life, begins the new year at the lowest ebb in a generation. Until now there always has been an automatic market—the still unwired premises. Nothing much had to be done about getting a share of that market, except to fight off competitors.

Today, for the first time, the market is almost stagnant, has reached a maximum saturation. Nearly every home, store, office and plant is wired, at least enough to "get by." New building scarcely exists. The electrical construction business, involving contractor, wireman and wholesaler, faces a fork in the road. The familiar path, with its deep wheel tracks, is the figure-giving, low-bidding, daily permit-combing, lumber truck-chasing way, but it now leads down a blind alley.

Branching off sharply to the right is a new fork, the unfamiliar way of creative business. New, strange, hard, closed off by habit, by prejudice and by ignorance, but chiefly by fear of the closer menace—a competitor—it seldom has been explored. Architects, engineers, builders, developers and promoters always have created the work for the construction group in the past. Now it must initiate, must create its own.

For all its strangeness, its undoubted difficulties, this new creative road should not frighten. First, the construction group must readjust its viewpoint; second, revamp its traditional methods of business conduct so as to make the business truly a business and no longer a gamble. Then it must read, think, plan and, from these, SELL PROFITABLY. The road in many places will be found to have been smoothed by the advertising and other promotional efforts of the industry.

Public attitude is friendly to electricity, even if Scotch about expenditures. It needs to be convinced by sheer personal persuasion and dogged persistence that it needs more electricity, and hence more facilities to use it, even before buying many of the other so-called necessities.

Construction in 1933 holds its own fate in its hands. Whether it sinks or swims depends upon its own courage and resourcefulness and—far more important—imagination.

Engineering in 1933

WHATEVER else the engineering profession may do in 1933 and in subsequent years, it has the choice of living down or living up to a reputation gained in 1932. We refer to "Technocracy" divorced of its mumble-jumble and stripped to bare fundamentals. Whether the precepts of this new movement are right or wrong, the public acclaim and enthusiasm for the idea of applying engineering principles to production, distribution, finance and government, as well as to the design and operation of machines, opens new fields of responsibility to the profession. And whether or not engineers are responsible for technological unemployment, they have an unparalleled opportunity for contributing to the development of a stable social and economic order.

In 1933 the roles of counsel, advisor and administrator await the engineer, in addition to those of designer and constructor. He can supply some of the needed lubrication of facts and figures and help build a firm highway of confidence for a stalled and bogged-down economic machine. He must refute the charge that the machine he has designed and helped to build is a social evil.

The electrical industry, closely related as it is to engineering progress, has its problems, too. As regards load-building, the cost of selling and the cost of serving any particular appliance have yet to be subjected to engineering scrutiny to determine the point of marginal return. The problem of competitive power and competitive fuels must be worked out on a sound engineering basis and not attacked blindly with only prejudice as a weapon. Demand, load factor and power factor need engineering analysis to the end of making just allocation of costs and revenues, more equitable rates and, above all, to foster load building. Research must be continued on a scale commensurate with the growth of the industry. Transmission and distribution losses still are too high. The electrical engineer has a job for 1933.

The engineering profession as a whole has brilliant future. It must sell its right to a hearing in the councils from which the formula for a rejuvenated prosperity will emerge. 1933 will test its mettle, tax its resources and challenge its ability.

Table I—Central Station Operation in 11 Western States, 1931 and 1932

Item	11 Western States 1931	11 Western States 1932*	United States 1931	United States 1932*	Per Cent 11 Western States of Total U. S.
Energy Generated (millions of kw.-hr.)	15,099	13,176	86,312	77,593	16.7
Energy Generated by Hydro Plants (millions of kw.-hr.)	10,187	11,007	28,570	31,014	35.4
Energy Generated by Steam Plants (millions of kw.-hr.)	4,912	2,169	57,742	47,574	4.55
Percentage of Total Energy Produced by Hydro	67.5	83.5	33.0	39.4	....
Hydro Generating Capacity (kw.)	3,267,184	3,456,934	9,142,327	9,448,589	36.6
Steam Generating Capacity (kw.)	1,714,571	1,823,332	24,664,719	25,450,242	7.16
Internal Combustion Capacity (kw.)	47,547	55,660	432,061	475,671	11.7
Gross Revenue from Sale of Energy	$267,700,000	$247,000,000	$2,125,000,000	$1,979,200,000	12.5
Operating and Maintenance Expenses†	$100,200,000	$ 90,400,000	$ 913,900,000	$ 839,600,000	10.79

†Do not include interest, taxes, depreciation or sinking fund charges.
*Based on ten months' operations.

A Stable Industry Despite Recessions

Faced With Declines in Output, Revenue and Consumers, Power Companies Fight to Hold the Line; Drop in Output From Steam Plants Results in Savings; Losses in Power Load Offset Domestic Gains; Upswing in Industrial Consumption Would Result in New Construction Expenditures

FURTHER demonstration of the stability of the electric light and power industry of the 11 Western states in the face of a third year of economic disorder is contained in the statistics for 1932. Recessions were to be expected in revenue, output and customers, but the manner in which these were held down indicates the determined efforts of the industry to hold the line. Additional loss of industrial load plus a shrinkage in sales for commercial purposes more than offset the gains registered in the domestic market during 1932.

Output for the year dropped 12.7 per cent to 13,176,000,000 kw.-hr., in line with the decline nationally, although this figure still represents 16.7 per cent of the energy consumption for the entire country. Ample water supply following the abnormally dry season of 1930-31, coupled with a decreased demand upon steam plants except for peaking, made 1932 another banner year for hydro-generated power. The entire drop in output for the year occurred in steam-generated power. In all likelihood the favorable financial showing of most of the companies, despite the loss of gross revenue due to decreased sales, can be attributed in some measure to the saving in fuel costs which this condition permitted. Steam-generated power dropped from 4,912,000,000 kw.-hr. to 2,169,000,000 kw.-hr. There was an actual increase of 820,000,000 kw.-hr. in power output of hydro stations during the year, bringing the total from this source to 11,007,000,000 kw.-hr. The West continues as the leading hydro region of the country, with 35.4 per cent of the national total of power produced from this source. Greatest declines in output among individual states occurred in Arizona, Idaho and Montana, where the mining industries, which were the largest consumers, have practically ceased operations.

Gross revenue registered the first sharp decline in

Table II—Energy Generated in Public Utility Plants of 11 Western States, 1922-1932

State	ENERGY GENERATED (THOUSANDS OF KW.-HR.) 1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932†
California	4,379,703	5,069,314	5,566,440	6,215,813	6,898,620	7,355,548	7,979,837	8,849,622	8,948,326	8,796,177	7,996,177
Oregon	512,804	594,434	678,394	729,859	831,135	844,654	1,040,743	1,161,386	1,219,250	1,176,987	971,208
Washington	1,285,625	1,446,486	1,503,560	1,623,007	1,807,792	2,121,939	2,361,024	2,552,325	2,555,233	2,572,134	2,563,940
Nevada	39,282	47,048	41,623	39,703	36,840	51,236	54,935	43,840	42,895	19,006	34,902
Utah	145,689	272,577	266,946	339,967	349,604	338,067	282,791	402,005	292,550	276,483	267,982
Arizona	144,615	157,183	153,196	130,531	172,243	278,559	335,755	283,023	384,443	404,309	267,561
New Mexico	17,140	18,268	19,913	21,787	25,993	33,462	52,326	67,179	75,871	179,658	157,808
Colorado	413,475	461,570	490,030	522,892	561,962	551,173	541,150	563,813	573,341	528,817	486,104
Wyoming	38,985	48,853	53,556	55,544	59,381	66,493	83,931	98,665	98,215	94,539	84,949
Idaho	615,783	694,781	792,532	754,079	810,789	806,402	947,709	894,417	911,709	796,484	591,126
Montana	984,972	1,138,545	1,145,285	1,262,629	1,407,903	1,394,655	1,619,351	1,613,688	1,319,800	966,097	639,879

†December estimated.

Table III—Classification of Central Station Customers Showing Growth in 1932

State	Total Central Station Customers			Domestic Lighting Customers			Commercial Lighting and Small Power Customers			Wholesale Power and Miscellaneous Customers		
	Jan. 1* 1932	Jan. 1† 1933	Change	Jan. 1 1932	Jan. 1 1933	Change	Jan. 1 1932	Jan. 1 1933	Change	Jan. 1 1932	Jan. 1 1933	Change
California	1,869,397	1,857,790	—11,607	1,487,797	1,476,197	—11,600	258,407	260,962	+2,555	123,193	120,631	—2,562
Oregon	233,447	227,282	—6,165	179,082	174,074	—5,008	34,603	33,403	—1,200	19,762	19,805	+43
Washington	425,783	420,775	—5,008	324,062	323,180	—882	61,267	56,531	—4,736	40,454	41,064	+610
Nevada	17,716	18,133	+417	13,542	13,850	+308	3,135	3,206	+71	1,039	1,077	+38
Utah	107,776	105,964	—1,812	80,712	79,002	—1,710	11,439	11,371	—68	15,625	15,591	—34
Arizona	71,673	68,871	—2,802	55,016	51,971	—3,045	10,098	9,855	—243	6,559	7,045	+486
New Mexico	35,256	34,993	—263	26,773	26,492	—281	6,415	6,434	+19	2,068	2,067	—1
Colorado	207,866	206,405	—1,461	164,225	162,503	—1,772	28,986	29,201	+215	14,655	14,701	+46
Wyoming	33,642	32,987	—655	26,267	25,744	—523	6,059	5,975	—84	1,316	1,268	—48
Idaho	75,713	74,236	—1,477	51,377	49,931	—1,446	11,358	11,117	—241	12,978	13,188	+210
Montana	84,147	82,012	—2,135	66,410	64,254	—2,156	14,527	14,257	—270	3,210	3,501	+291
11 Western States	3,162,416	3,129,448	—32,968	2,475,263	2,447,198	—28,065	446,294	442,312	—3,982	240,859	239,932	—921
Total United States	24,489,770	24,187,151	—302,619	20,151,247	19,874,513	—276,734	3,724,013	3,690,284	—33,729	614,510	622,354	+7,844

*1932 figures corrected and revised.
†1933 figures from Oct. 1, 1932, figures.

the history of the industry in this territory, dropping from $267,700,000 to $247,000,000, or 13.3 per cent, as compared to a national loss of only 6.8 per cent. However, operating and maintenance charges decreased 10 per cent to $90,400,000.

Installed capacity of power plants in the 11 Western states was 5,335,926 kw. on Jan. 1, 1933, with an increase for the year of 6.1 per cent. Hydro capacity is now 3,456,934 kw. and steam capacity 1,823,332 kw. Increases in these two classifications during 1932 were 5.8 and 6.0 per cent, respectively.

During the year there was a 9.6 per cent decrease in the total number of customers served in this area, the major drop being recorded in the domestic classification. Latest available figures show the total number of all classes of customers to be 3,129,448, of which 2,447,198 are domestic, 442,312 commercial and small power and 239,932 wholesale power and miscellaneous consumers.

California retains its position of leadership among electrified states of the nation. It was second to New York in point of energy generation, first among all states in hydro power generated and is exceeded only by New York and Pennsylvania in total number of customers. California and Washington outrank all states in the total number of electrified farms.

Capital expenditures for the Western states aggregated only $49,600,000 in 1932. These were classified as $25,000,000 in additions to distribution facilities, $12,400,000 to transmission systems, $2,900,000 to hydro plants and $6,400,000 to steam plants. Expenditures for 1933 depend largely upon an economic upturn that will start the wheels of industry. With resumption of industrial consumption, system demand will require additions and extensions since the increase in domestic load has been more than sufficient to absorb the normal increment of system capacity. In the case of many of the utility companies, a reservoir of deferred construction is being built, to be released just as soon as justified by economic conditions. One Western power company has in excess of $20,000,000 of such deferred projects. Those budget figures which have been released by individual companies represent absolute minimum system requirements for maintenance and betterments.

The recessions all along the line, shown by the figures for 1932, have not depressed the industry. Instead, there is a growing tendency to study and appraise markets and to work out definite programs for recouping losses. There is no industry in the country with greater market possibilities or with greater opportunities for creative selling. Electrification of America is far from an accomplished fact. Progress may be momentarily retarded as the "depression" goes into its fortieth month, but sturdy foundations are being laid for the next upswing, in which the electrical industry is destined to play a leading part. Any upward trend in general industry or business promises to start a series of waves which will be reflected in increasingly profitable operation for every branch of the electrical industry.

Table IV—Valuation of Additions and Extensions to Western Power Systems, 1926-1932

	1926	1927	1928	1929	1930	1931	1932
Hydro-Electric Generating Stations	$ 45,000,000	$ 21,497,000	$ 22,588,100	$ 23,482,000	$ 39,007,000	$ 21,266,000	$2,900,000
Steam-Electric Generating Stations	25,000,000	13,711,000	16,905,700	15,758,000	21,794,000	11,437,000	6,400,000
Transmission Systems	60,000,000	22,121,000	18,575,100	27,902,000	15,662,000	18,969,000	12,400,000
Distribution Systems	40,132,000	49,878,000	45,966,100	56,029,000	58,540,000	50,329,000	25,000,000
Miscellaneous Expenditures†	.....	.....	3,284,000	7,177,000	4,797,040	7,040,739	.....
Total	$170,132,000	$107,207,000	$107,319,000	$130,348,000	$139,800,040	$109,041,739	$46,700,000

†Not included prior to 1928.

Some Additions to Hydro-electric Generation

No.	COMPANY	PLANT	LOCATION	DAMS			CANALS AND TUNNELS			PENSTOCKS			HEAD	
				Type	Reservoir Capacity (Acre-ft.)	Height (Ft.)	Type	Dia. (Ft.)	Length (Ft.)	Dia.	Length (Ft.)	Type	Static	
(1)	West Kootenay Power & Light Co., Ltd.	Corra Linn No. 4	Corra Linn Falls, B. C.	Concrete Gravity	1,000	69	.....	.....	.....	22'4"	54	Concrete	83	
(2)	U. S. Bureau of Reclamation.....	Prosser	Yakima River, Wash.	.....	.....	....	Canal	.....	2 mi.	11'	50	Concrete	42.3-33.2	
(3)	City of Seattle, Light Department.....	Diablo	Skagit River, Wash.	Constant Angle	90,000	389	Tunnel	19'6"	2,100	15'	150	Riveted	325	
(4)	Puget Sound Power & Light Company.	Rock Island	Columbia River	Steel Gates	25,000	108	.....	.....	.....	.....	.....	.....	Var	
(5)	Inland Power & Light Company.....	Ariel	Lewis River, Wash.	Constant Angle	220,000	185	.....	.....	.....	15'6"	130	Riveted	260	
(6)	California Oregon Power Company....	Prospect No. 3	So. Fork, Rogue River, Ore.	Concrete Gravity	.....	....	Canal Tunnel Pipe	4'-5' 5'-6'6" 66"	6,400 700 5,312	66"-48"	3,252	Riveted	720	
(7)	Portland General Electric Company....	Station P	Three Links, Clackamas River	.....	.....	....	Tunnel	.....	3,500	.....	.....	.....	.....	
(8)**	Public Service Company of Colorado...	Grand Valley	Colorado River, Colo.	†	†	†	†	†	†	2 (6'	265	Steel)	76	
(9)	U. S. Bureau of Reclamation.....	Hoover Dam	Colorado River	Arch Gravity	29,500,000	725	2 Tunnels 2 Tunnels	50' 30'	.....	11'	.....	Steel	422-584	
(10)	Los Angeles Bureau of Power & Light..	San Francisquito No. 2	San Francisquito Canyon, Calif.	†	†	†	†	†	†	7'-6'	1,430	Welded	530	
(11)	Southern California Edison Company Ltd.....	Borel	Kern River	Earth	.....	11	Tunnel Canal	....	1,985 57,812	5'	594	Steel	270	

†Existing structures or facilities will be used.
*Abbreviations used are: G.E., General Electric Company; A.-C., Allis-Chalmers Manufacturing Company; S.M.S., S. Morgan Smith Company; West., Westinghouse Electric & Manufacturing Co; Can. West., Canadian Westinghouse Electric & Manufacturing Company; Pelton, Pelton Water Wheel Company; N.N., Newport News Shipbuilding and Drydock Company; Penn., Pennsylvania Transformer Company; D.E.W., Dominion Engineering Works, Ltd.; C.G.E., Canadian General Electric Company, Ltd.; El. Mach., Electric Machinery.
**Built by U. S. Bureau of Reclamation, operated by Public Service Company of Colorado for 25 years.

Review of New Plants Shows Continued Growth

Substantial Gains Recorded in Western Generating Facilities, Notwithstanding Load Conditions Which Have Lowered Construction Rate of the Last Decade; Hydro Power Regains Supremacy in 1933

LARGE developments which will insure an abundance of economical power for the development of the West are a feature of the 1932-1933 survey of electric production in the eleven Western states. In general, certain adverse factors, included among which are a restricted financial market, reduced consumption to the amount of approximately 10 per cent and a normal water year, have tended to reduce both the number and aggregate capacity of plant additions, but the West finished 1932 with the impressive sum of 252,250 kva. in new generating capacity. Of this, 189,750 kva. is in new hydro-electric plants and 62,500 kva. in steam-generating plants.

From the hydro-electric standpoint, much was accomplished during 1932. A resumption of a nearly normal rate of precipitation not only returned the hydro plant to a place of favor as a generating unit, but also gave to existing plants the means for again taking the base load of the various systems, as reflected by the fact that 88.7 per cent of the generated power in the West was produced by falling water during the year.

Included in the 189,750 kva. of new hydro plants is

Some Additions to Steam Electric Generation

No.	COMPANY	PLANT	LOCATION	BOILERS				FUEL	PRIME MOVERS		
				No.	Type	Capacity (Boiler hp.)	Maker		No.	Capacity (Kw.)	
(1)	City of Tacoma, Light Department.....	.....	Hylebos Waterway.....	2	Stirling	1,620	P.S.M.*	Pulv. Coal	1	25,000	G
(2)	City of Pasadena.....	Glenarm St.....	Pasadena, Calif.	2	.....	1,500	.....	Oil and Gas	1	25,000	...
(3)	City of Vernon.....	.....	Vernon, Calif.	...	.....	.....	.....	Oil	5	6,000	H Di
(4)	The Hawaiian Electric Co., Ltd.....	Ext. No. 3.....	Honolulu	1	Cross Drum (Welded)	.....	B.&W.	Oil	1	10,000	W

*Abbreviations used are: A.-C., Allis-Chalmers Manufacturing Company; B.&W., Babcock & Wilcox Company; G.E., General Electric Company; H.O.R., Hooven, Owens, Rentschler Company; P.S.M.

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ations in the Eleven Western States, 1932-1933

PRIME MOVERS		GENERATING UNITS			PLANT CAPACITY (kw.)		TRANSFORMERS	TRANSMISSION LINES			PRESENT STAGE OF DEVELOPMENT	ESTIMATED COST	No.
Capacity (Hp.)	Maker	No.	Capacity (Kva.)	Maker	Present or Proposed	Ultimate		Length (Mi.)	Voltage (Kv.)	Type			
19,000	D.R.W.*	3	15,000	C.G.E.	57,000 (hp.)	57,000 (hp.)	9-5,000-kva. Can. West.	.....	...	.....	Completed 1932	$3,600,000	(1)
4,200	N.N.	1	3,000	G.E.	4,200 (hp.)	4,200 (hp.)	1-3,000-kva. Penn.	1.25	66	.....	Completed 1932	444,000	(2)
83,300	S.M.S.	2	67,500	West.	166,600 (hp.)	320,000 (hp.)	7-22,750-kva.	123.4	220	Steel Tower	Under Construction	13,000,000	(3)
21,000	A.-C.	4	16,667	G.E.	60,000	180,000	13-10,000-15,000-kva. West.	82.5	110	Wood Pole Steel Tower	Completed 1932	14,400,000	(4)
61,000	S.M.S.	1	45,000 (kw.)	G.E.	45,000	160,000	3-18,750-kva., 110,000 volt	28	110	Wood Pole	Completed 1932	8,500,000	(5)
10,000	Pelton	1	9,000	.....	7,200	7,200	3-3,000-kva. Maloney	6.82	66	Wood Pole	Completed 1932	.....	(6)
.....	.....	...	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	(7)
2,300	Pelton	2	1,875	El.Mach.	4,600 (hp.)	4,600 (hp.)	4-1,250-kva.	17	23	Wood Pole	Completed 1932	295,000	(8)
115,000 55,000	.....	15 2	82,500 40,000	.....	.....	1,835,000 (hp.)	.....	125	88	Steel Tower	1st Units Sept. 1935	125,000,000	(9)
21,000	N.N.	1	17,500	A.-C.	42,000	42,000	3-5,833-kva. G.E.	†	†	†	Completed 1932	600,000	(10)
7,200	Pelton	1	6,250	G.E.	13,400 (hp.)	13,400 (hp.)	4-4,000-kva. 66,000 volt. G. E.	.....	...	.....	Reconstruction included 1 new unit, removal of 3 old units	380,000	(11)

the initial 66,600 kva. of the 180,000-kva. Rock Island development of the Puget Sound Power & Light Co. on the Columbia River; the first 45,000-kva unit of the Inland Power & Light Co.'s Ariel Plant on the Lewis River; a 10,000-kva. unit for Prospect Plant No. 3 of The California Oregon Power Co.; a 45,000-kva. plant of the West Kootenay Light & Power Co. at Corra Linn Falls, B. C.; and a 17,500-kva. unit for the City of Los Angeles Department of Water & Power at its San Francisquito Plant No. 2, which brings that plant up to its ultimate capacity of 42,000 kw. For 1933 the most important hydro-electric projects will be the work at Hoover Dam and the completion of the 135,000-kva. Diablo plant of the City of Seattle, Wash., work on which will be speeded by what appears to be a successful negotiation for Reconstruction Finance Corporation aid.

As might be expected, a normal water year and decreased consumption have caused a temporary recession in the rate of additions to fuel-burning plants. Completed during 1932 were plants for the City of Tacoma, Wash., and the City of Pasadena, Calif., each being rated 25,000 kw., the former being one of the few plants on the Pacific Coast to burn pulverized coal. Early in 1933 the first large-size diesel-electric plant in the country will be put into service by the City of Vernon, Calif. This plant, embodying an entirely new type of design, will have for its initial installation five 6,000-kva. diesel-driven units, which will be the largest yet to be used for stationary power generation.

Future plant additions will depend largely upon the success of load-building efforts and the return to a normal rate of growth in the consumption of electric energy. Prior to 1929, plants were being rushed to completion to meet the continually increasing demand for electric power. The temporary drop in consumption, small as it may be, provides an operating margin for most utilities which precludes the necessity for additional generating facilities. Many utilities, however, now able to care for all demands on their systems, will be forced to install new capacity immediately after a definite upturn in consumption. Considering the fact that domestic consumption largely has offset the reduction in industrial load, industrial machines, now idle, represent a potential demand for power which will be available immediately after business conditions improve. This is true in every section of the West, with the possible exception of southern California, where the electric utilities await the reservoir of power now being made available by Hoover Dam, the first of which will be ready in 1935. With the 1,500,000 kva. soon to be made available by this development, supplementary generating facilities will be postponed until a definite increase in consumption makes them necessary.

Regarding future trends in electric production in the West, it seems probable that both steam and hydro

tions in the Eleven Western States, 1932-1933

GENERATORS		PLANT CAPACITY (Kw.)		TRANSFORMERS	TRAMSMISSION LINES			PRESENT STATUS	ESTIMATED COST	No.
Capacity (Kva.)	Maker	Present or Proposed	Ultimate		Length (Mi.)	Voltage (Kv.)	Type			
25,000	G.E.	25,000	100,000	Feeds into dist. system at gen. voltage	.....	.....	.....	Completed 1932	$2,000,000	(1)
25,000	A.-C.	60,000	.....	Generation at dist. voltage	.....	.....	.....	Completed 1932	.....	(2)
6,000	.....	30,000	.....	Generation at dist. voltage	.....	.....	.....	Under construction	3,000,000	(3)
12,500	West.	60,000	.....	.....	.....	.....	.....	Under construction	.....	(4)

Machinery Depot; West., Westinghouse Electric & Manufacturing Company.

Additions to Generating Capacity in the 11 Western States, 1924-1933

Year	Hydro-electric Capacity (kva.)	Fuel-burning Capacity (kva.)	Total (kva.)
1924	243,223	147,500	390,725
1925	321,125	95,000	416,125
1926	111,500	116,805	228,305
1927	236,433	23,750	260,183
1928	292,250	238,035	530,285
1929	98,250	103,750	202,000
1930	255,800	276,500	532,300
1931	136,000	131,000	267,000
1932	189,750	62,500	252,250
1933*	135,000	40,000	175,000
Total for 10-year period	2,019,361	1,224,840	3,164,923
Average for 10-year period	201,936	122,484	316,492

*Projected.

generation will share equally in electrical progress. With the development of practically all of the accessible hydro-electric sites, it becomes necessary to develop large blocks of power at more remote projects to produce power economically. It therefore appears evident that future hydraulic developments will be more on the order of Rock Island, Ariel, Diablo and Hoover Dam. The continued growth of oil and natural gas pipe lines makes it possible to develop fuel-burning generating plants economically in the load centers near metropolitan areas. Already, cheap natural gas makes it possible to produce a kilowatt-hour in certain California cities more cheaply than the same amount of energy can be brought in from existing hydro plants.

Faced with increased activity from competitive power interests, it is logical that the electrical utilities will make every effort to reduce power costs and to improve service to the consumer. In such a program the economy of the most modern combustion equipment for fuel-burning plants and the automatic operation for hydro-electric plants play a logical part. With continued progress in increasing the rating and reliability of diesel engines, it is possible that this type of prime mover may be utilized by large utilities to supply nominal load growth of certain parts of a system until such time as a large, high-economy steam plant may be justified.

Reduced consumption in 1932 was responsible for postponing work on several large developments, among which are the Flathead project of the Montana Power Co., a 65,000-kw. steam plant for the Pacific Gas and Electric Co., and a 52,500-kva. addition to the Seal Beach plant of the Los Angeles Gas and Electric Corp. Resumption of work on these and other proposed developments await only a definite upturn in consumption, which will be hastened by load-building efforts now under way.

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New Lines Provide Service Reliability

Additions to Transmission and Distribution Systems Reflect Effect of Load-Building Campaigns; $37,400,000 Expended in 1932 for New Construction

AS IN 1932, additions to transmission and distribution facilities will account for a large proportion of construction expenditures by utilities in the eleven Western states. Activity in this particular phase of electrical growth during the past year has been confined largely to strengthening existing systems with additional power lines rather than connecting new plants to load areas.

By far the largest part of the 260 miles of construction comprising 1932 transmission additions were in the 50-70-kv. class and were composed of relatively short individual sections between substations or between systems, many being built on wooden structures. Probably the most interesting individual addition was made by the Northwestern Electric Co. in connecting its Albina Substation with the transmission line from Ariel power plant of the Inland Power & Light Co. This power line involved crossing the Columbia River near Vancouver, Wash., and three 110-kv., hollow-core, oil-filled submarine cables, the first of their kind, were used for this purpose. (See Electrical West, Nov. 1, 1932, pp. 182-186, for complete details.)

Construction budgets for transmission construction in 1933 probably will be spent for additions very similar to those of the past year. The most important line contemplation for the year is that of the Metropolitan Water District to furnish power for construction activities along the Colorado River Aqueduct, described elsewhere in this issue.

Distribution additions, 22 kv. and below, also reflect the decreased consumption characteristic of 1932 load curves. As reported to ELECTRICAL WEST, 297 miles of urban construction and 1,103 miles of rural lines were added during the year. Projected additions for 1933 include 230 miles of urban and 1,097 miles of rural construction.

In practically all sections of the West, reports indicate that distribution maintenance and new construction are giving the utilities an opportunity to spread employment. Indications are that much of the 1932 distribution budgets will be devoted to converting overhead circuits to underground. The cities of Pasadena, Riverside and Los Angeles already have started such a program, and underground additions are being made in Portland, Ore., and Long Beach, Calif.

The City of Tacoma reports that the practice of setting small transformers close to range and heating load and increasing the size of copper in the neutrals to avoid unbalanced load in the ranges is proving satisfactory, particularly in reducing the number of radio interference complaints. This utility also is experimenting with twisted three-conductor secondaries to im-

Miles of Distribution Construction in the West

22 KV. AND BELOW

State	Urban 1932	Urban 1933*	Rural 1932	Rural 1933*
Arizona	9	11	20	35
California	125	100	379	468
Colorado	13	10	34	27
Idaho	9	4	110	52
Montana	15	10	100	60
Oregon	32	19	165	125
Nevada	3	5	25	20
New Mexico	5	8	15	20
Utah	7	4	21	30
Washington	64	51	180	200
Wyoming	5	3	10	21
British Columbia	10	5	44	30
	297	230	1,103	1,089

*Projected.

Some Additions to Transmission Line Construction in the Eleven Western States, 1932-1933

Company	Location	Length (Mi.)	Voltage (Kv.)	No. of Circuits	Supporting Structures	Conductors	Insulators	Spans (Ft.) Av.	Spans (Ft.) Max.	Status	Cost
ARIZONA											
The Arizona Power Co.	Arizona Metal Mines to Hassayampa Gold Mines	3.6	44	1	Wood pole	No. 4 copper Anaconda	Pin-type, West.*	300	547	Completed 1932	$ 4,000
BRITISH COLUMBIA											
West Kootenay Light & Power Co., Ltd.	Kelowna to Oyama	11.34	60	1	Wood pole	90,000 circ. mil, str. copper	Pin-type, C.O.B.	200	317	Completed 1932	33,925
West Kootenay Light & Power Co., Ltd.	Tadanac to Corra Linn	30.95	60	1	Wood pole	300,000 circ. mil, str. copper	Pin-type, C.O.B.	250	1,656	Completed 1932	143,825
CALIFORNIA											
City of Los Angeles	System ties	11.4	33	...	Wood pole	Str. copper	Pin-type, O.B.	180	180	Completed 1932	.....
Midland Counties Public Service Corp.	San Luis Substation Tie Line	7.20	70	2	Steel, P.C.S.	3/0 str. copper	West. 6-unit susp.	895	1,934	Under construction	60,000
Pacific Gas and Electric Co.	Cordelia to Marin	5.25	60	1	Steel	2/0 str. copper	7-unit susp. 8 d.c.	800	800	Completed 1932	101,600
Pacific Gas and Electric Co.	Mud Slough to Redwood City	12.0	60	2	Steel	250,000 circ. mil, str. copper	6-units susp.	800	1,000	Completed 1932	200,000
Pacific Gas and Electric Co.	Napa to St. Helena	22.3	60	1	Wood pole	13.5 mi. 2/0 str. copper 8.8 mi. 1/0 str. copper	Pin-type	250	800	Completed 1932	80,000
Pacific Gas and Electric Co.	Cordelia to Napa	12.0	60	1	Wood pole	2/0 str. copper	Pin-type	300	1,000	Completed 1932	60,000
San Joaquin Light & Power Corp.	Incline Sub. to Yosemite Nat'l Park	5.09	30	1	Steel, P.C.S.	3/0 A.C.S.R.	Locke 18401, 4-unit susp., 5-unit d.e.	625	2,110	Completed 1932	50,000
Southern California Edison Company Ltd.	Saticoy to Santa Barbara	18.5	66	1	Steel	2/0 str. copper	4-unit cap & pin, susp., 5-unit d.e.	1,000	3,214	Completed 1932	648,000
Southern California Edison Company Ltd.	Carpinteria to Santa Barbara	11.0	66	1	Steel	2/0 str. copper	5-unit cap & pin, susp.	1,000	3,193	Completed 1932	.....
Southern California Edison Company Ltd.	Casitas to Santa Barbara	20.0	66	1	Steel	2/0 str. copper	5-unit cap & pin, susp.	1,000	3,191	Completed 1932	.....
Southern California Edison Company Ltd.	Saticoy to Casitas	10.0	66	2	Steel	2/0 str. copper	5-unit cap & pin, susp.	1,000	2,894	Completed 1932	89,400
Southern California Edison Company Ltd.	Carmenita to Katella	7.0	66	1	Wood pole	4/0 str. copper	4-unit fog-type susp.	175	400	Under construction	24,000
Southern California Edison Company Ltd.	Lighthipe to Fairview	26.5	66	1	23 mi. Wood pole 2 mi. Steel	4/0 str. copper	4-unit fog-type susp.	175	400	Completed 1932	136,000
Southern California Edison Company Ltd.	Lighthipe to Oceanview	9.0	66	1	4.5 mi. Wood pole 4.5 mi. Steel	4/0 str. copper	4-unit fog-type susp.	330	400	Under construction	28,000
Southern California Edison Company Ltd.	Lighthipe to Katella	6.0	66	1	Wood pole	4/0 str. copper	4-unit fog-type susp.	175	400	Completed 1932	18,000
Southern California Edison Company Ltd.	Laguna Bell to Chino	8.5	66	1	Wood pole	4/0 str. copper	4-unit fog-type susp.	175	270	Under construction	51,000
Southern California Edison Company Ltd.	Ripple to Glendale	3.3	66	1	Wood pole	4/0 str. copper	1.7 mi. Lapp post-type 1.6 mi. 4-unit fog-type susp.	150	...	Completed 1932	9,200
Southern California Edison Company Ltd.	Eagle Rock to Garfield No. 1	4.5	66	1	Wood and steel	4/0 str. copper	5-unit cap & pin, susp. 4-unit, fog-type	160	1,000	Completed 1932	19,850
Turlock Irrigation District	Delhi to Hilmar	5.0	60	1	Wood pole, Baxter	No. 4 str. copper	Lapp. 4-unit susp.	203	210	Completed 1932	12,000
Metropolitan Water District	Colton to San Jacinto Tunnel Location	45.0	66	1	Wood pole	Copper	West. 5-unit susp.	...	...	Under construction	.....
Metropolitan Water District		30.0	33	1	Wood pole	Copper	Pin-type	...	...	Under construction	.....
OREGON											
The California Oregon Power Company	Prospect No. 3 to Prospect No. 2	6.8	69	1	Wood pole	1/0 copper	4-unit susp., 5-unit d.e.	300	300	Completed 1932	24,000
Northwestern Electric Co.	West Vancouver Sub. to Albina Sub.	0.913	110	1	Submarine cable	750,000 circ. mil hollow-core, oil-filled cable, G.E.	.....	...	...	Completed 1932	175,000
Northwestern Electric Co.	West Vancouver Sub. to Albina Sub.	9.0	110	1	Wood pole	795,000 A.C.S.R.	4-unit susp., W.H. No. S-571037, Locke 18400, Thomas No. 1191-a-10	200	240	Completed 1932	90,000
WASHINGTON											
Puget Sound Power & Light Co.	Olympia to Elma	19.75	55	1	Wood pole	Nos. 1, 2 and 4 copper	3-unit susp.	220	800	Completed 1932	48,000
U. S. Bureau of Reclamation	Prosser Power Plant Tie	1.5	66	1	Wood pole	No. 1 copper	Pin-type	300	600	Completed 1932	3,600

*ABBREVIATIONS:—**Poles and Towers:** Baxter, J. H. Baxter & Co.; P.C.S., Pacific Coast Steel Company. **Conductors:** A.C.S.R., Aluminum Company of America; Anaconda, Anaconda Copper Mining Company; G.E., General Electric Company. **Insulators:** Lapp, Lapp Insulator Company, Inc.; O.B., Ohio Brass Company; C.O.B., Canadian Ohio Brass Company; Locke, Locke Insulator Corporation; Thomas, The R. Thomas & Sons Company; West., Westinghouse Electric & Mfg. Co.

prove load distribution between banked transformers. Continued efforts to develop satisfactory low-cost underground systems are reported also. One utility now is making an installation to be reported on in detail later, which gives promise of success along these lines.

Rural construction has been given impetus by the "back-to-the-land" movement prevalent in 1932 in many localities. Those leaving the cities are unwilling to forego the conveniences of electricity, and such customers, being familiar with the conveniences of load-building appliances, represent good prospects for the sale of such equipment. Most Western utilities are endeavoring to discover ways and means to reduce the cost of service to the rural customer. The problem is being attacked from two sides, one by endeavoring to increase the individual farm load and the other by economical design of service facilities.

In spite of the stagnation of industrial demand, load increases gained from domestic and rural customers have maintained total consumption at levels not far from those of 1929. Load building quotas for 1933 are larger than ever, and the success of these efforts in 1932, combined with cooperation from the entire electrical industry, promises results which will demand an appreciable increase in distribution facilities during 1933.

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Hoover Dam Progress Speeds Equipment Awards

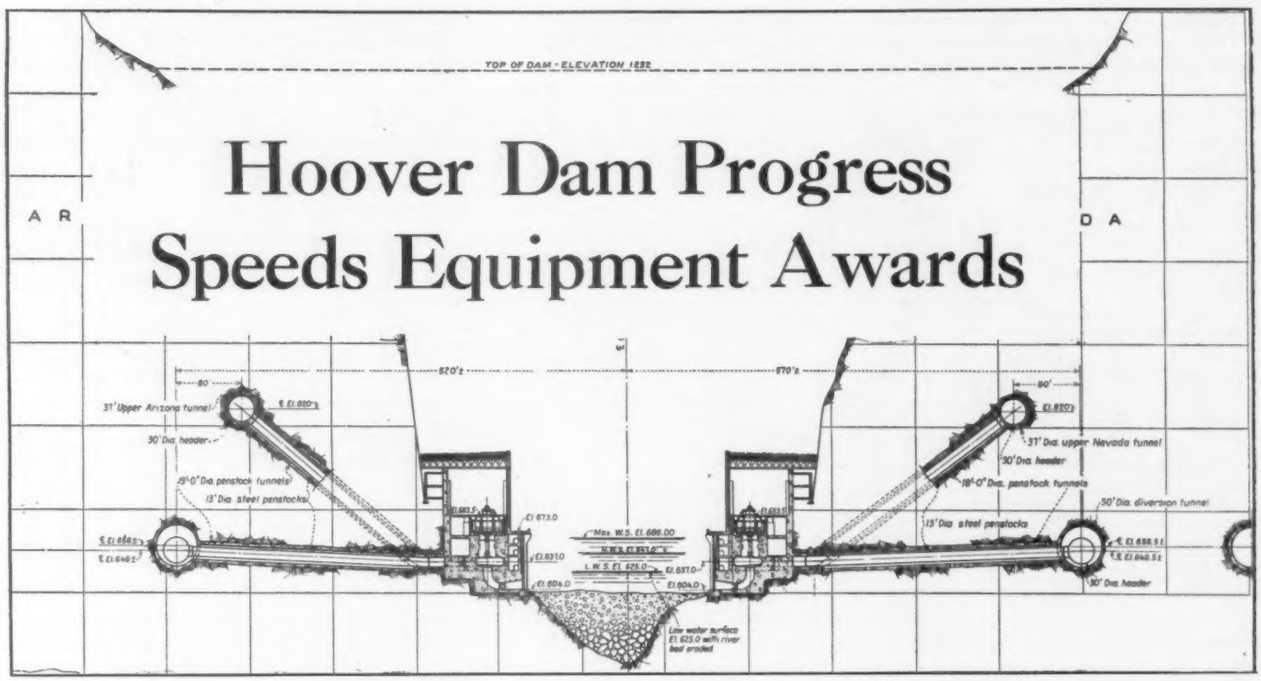


Fig. 1—Cross-section through the Hoover power plant

Plans Now Contemplate Colorado River Power Will Be Available Late in 1935; Final Power House Design Practically Completed and Bids on Five Original Units Will Be Opened Early This Year

WITH the Colorado River diverted, work well under way on the foundations of the dam and power house, and general progress on the Hoover Dam development well over a year ahead of schedule, events of importance to the electrical industry during 1933 will be the completion of the final design of Hoover Dam power house and the bidding on initial equipment for this gigantic power development. Designed for an ultimate installation of 1,317,500 kva., this power plant will be three times larger than either the Niagara Falls (United States plant) or the Muscle Shoals development. Work on the power house will start in February, 1933, and schedules now specify the completion of the two wings by September, 1934, the center portion being scheduled for completion in July, 1937. The first unit of the power plant should be in operation by September, 1935.

From the general plan of the development (Fig. 2), it will be seen that Hoover power plant will be located immediately below Hoover Dam and will be a U-shaped structure with the base of the U across the downstream toe of the dam, with one wing on each side of the river. Generating units to be installed in the wings of the power house will have an ultimate capacity of over 1,300,000 kva. and will be made up of fifteen 50-cycle main generating units rated at 82,500 kva. and two 60-cycle units rated at 40,000 kva.

From the general arrangement it will be seen that there will be four intake towers, two on each side of the river, immediately upstream from the dam. Each tower will control one-quarter of the water supply for the turbines in the power plant and each will have two cylinder gates so that the water can be shut off from any one of the four main penstocks without interfering with the operation of the other three. Steel penstocks 30 ft. in diameter and installed in the two 50-ft. diameter diversion tunnels and the two main penstock tunnels will conduct the water from the intake towers to the individual penstocks and to outlet valves. Each 30-ft. diameter main penstock will connect with four branch penstocks, each 13 ft. in diameter, to conduct water to the main turbines. The two 55,000-hp. units, however, both will be connected to the downstream

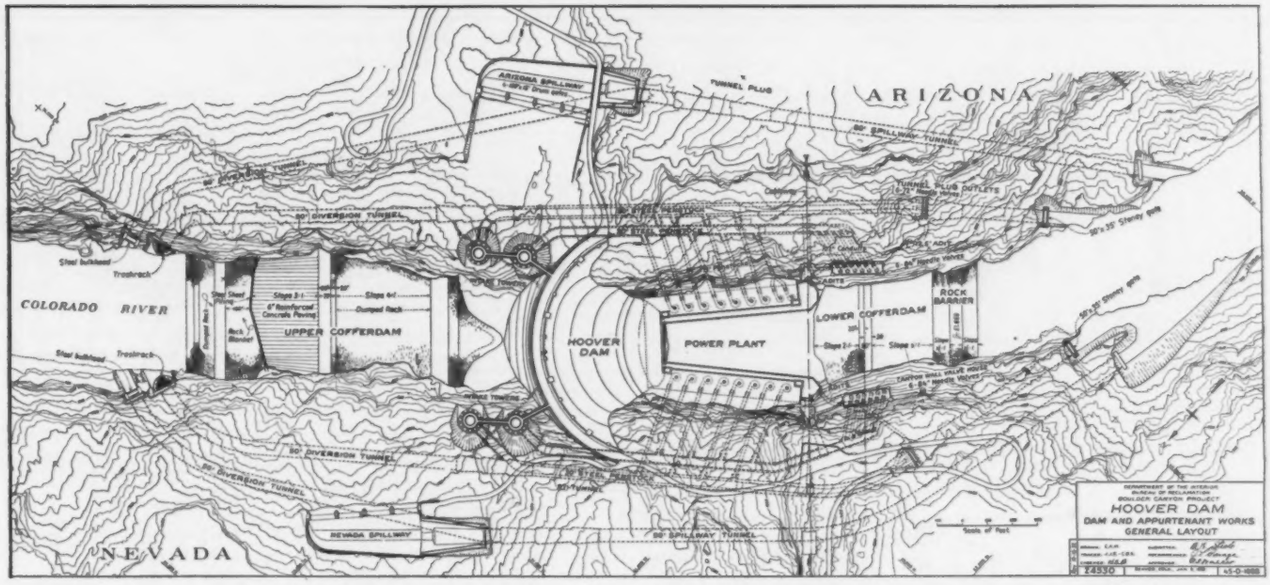


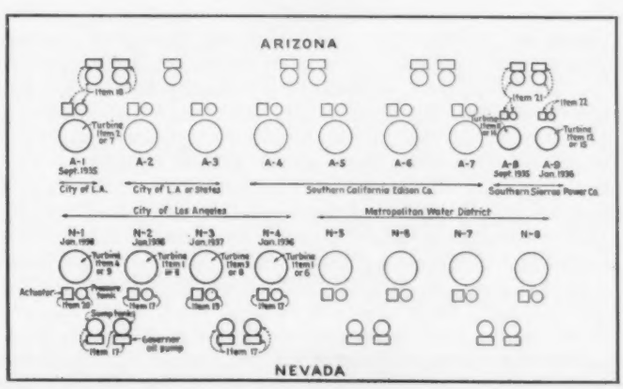
Fig. 2—General plan of Hoover dam, power house and hydraulic works. At present, the Colorado River is flowing through the 50-ft. diversion tunnel on the Arizona side, the river bed is unwatered and work is proceeding on the foundation of the dam and power house

13-ft. diameter branch penstock from the upper penstock tunnel on the Arizona side.

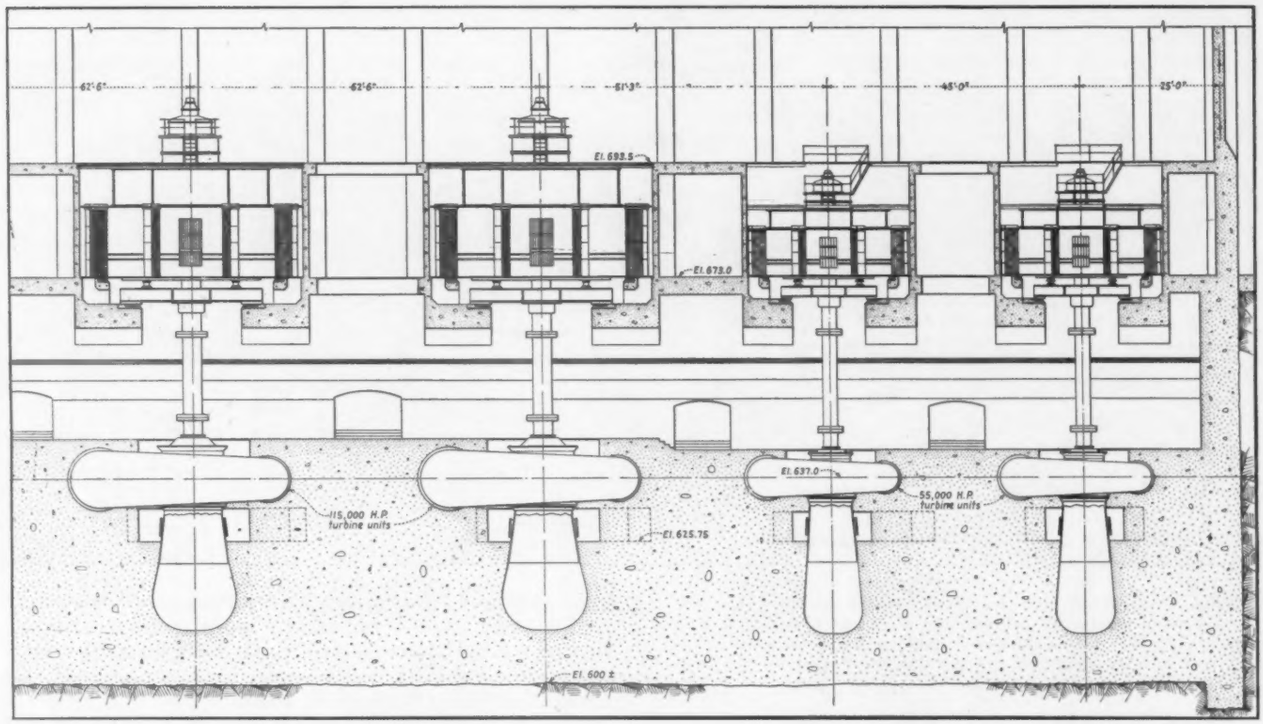
Turbines will be of the vertical-shaft, single-runner, spiral-casing type. Those rated 115,000 hp. will be designed to operate at a nominal speed of 150 r.p.m. Generators driven by these turbines will have 40 poles and will operate at 50 cycles. The 55,000-hp. turbines will be designed to operate at a speed of 257 1/7 r.p.m. Generators for the latter will have 28 poles and will operate at 60 cycles only. Hoover plant turbines will operate under a maximum head of 590 ft. and an average head of 530 ft.

Approximately $17,000,000 will be expended for machinery to be installed in the power plant by the government. Late in 1932, conferences were held with representatives of the utilities and equipment manufacturers to complete final plans for the design of the generators. Of the installed capacity of the plant, the two 40,000-kva. units will supply power for the Southern Sierras Power Co. and the Los Angeles Gas and Electric Corp., five of the 82,500-kva. units will be for the City of Los Angeles Bureau of Power and Light and also will supply several smaller municipalities who have contracted for this power. Power for these cities will be generated and transmitted by the Bureau of Power and Light. Four of the remaining main generating units will be for the Metropolitan Water District of Southern California and will furnish power for pumping purposes along the district's aqueduct, another four will generate power for the Southern California Edison Co., Ltd., and the remaining three units will be installed in the City of Los Angeles group and used to furnish power for the states of Arizona and Nevada in event these states eventually can utilize the power which has been allocated to them.

Fig. 3—Installation diagram of Hoover power plant generating units, showing their allocation and date of initial operation



Transmission of power from the Hoover plant will be under the jurisdiction of each of the interested utilities. While no definite decision has been reached, it is contemplated that a common voltage for the transmission circuit will be agreed upon. The City of Los Angeles Department of Water and Power, the Southern California Edison Co., Ltd., and the Metropolitan Water District contemplate two circuits each from the Hoover power plant. Four of these will transmit the power some 325 miles to Los Angeles, the two for the Metropolitan Water District will provide a 400-mi. loop circuit along the aqueduct route for pumping. The Southern Sierras Power Company, now delivering power to the dam site over a single-circuit steel tower line at 80 kv., contemplates utilizing this line for transmitting power from the dam by raising the voltage to 132 kv. when the power is made available.



Longitudinal section through one wing of Hoover Dam power plant. Physical size of these units is indicated by their installation on 62-ft. 6-in. centers

Transmission line studies are being made by the Los Angeles Bureau of Power and Light under the direction of B. Cozzens, who is working with Prof. J. S. Carroll at Stanford University. Results of this work promise further pioneering in high voltage transmission engineering, the proposed figure being 275 kv. for Hoover Dam transmission lines. Studies also are being made on the types of structures most suitable for the mechanical loads, climatic conditions and electrical characteristics of circuits involved in bringing Colorado River power into the metropolitan area of southern California.

Any description of the Hoover Dam power house fairly depletes the list of superlatives. With the greatest installed capacity and the largest generating units in the world, with transmission lines which will set new world's records for capacity and voltage, and with a unique hydraulic and electrical layout, this pioneering in advanced engineering practice will command a high place in world attention long after its completion in 1937.

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Colorado River Aqueduct

1933's Outstanding Electrical Project

Its Completion, Six Years Hence, Will Provide Southern California With 1,000,000,000 Gallons of Colorado River Water Daily and Will Set a New Record for Electrical Utilization in the 200,000 Kw. Needed for Pumping En Route

GIVEN impetus by the need for immediate employment, the Metropolitan Water District has surmounted the last of the legal, financial and labor organization obstacles and started the construction of the Colorado River Aqueduct which will supply the south coastal basin with a billion gallons of Colorado River water daily. By far the largest water development project ever undertaken, the Colorado River Aqueduct eclipses even Hoover Dam in magnitude of the investment involved.

Composed of the member cities of Los Angeles, Long Beach, Pasadena, Glendale, Burbank, Beverly Hills, Santa Monica, San Bernardino, Compton, Torrence, Santa Ana, Fullerton and Anaheim, the Metropolitan Water District aims to insure adequate water supply for the metropolitan area of southern California. The thirteen cities forming the district now have a population of 1,665,800, which, it is estimated, will increase to 2,500,000 in 1940 and reach 5,000,000 by 1980.

Exhaustive topographical and geological studies of the desolate desert area between the rich coastal basin and the Colorado River have been pursued since 1923, to the end of determining the most feasible route, locations for storage, dam site and other important data for the aqueduct. So exhaustive was this study that a total of 60 routes for the aqueduct were considered and analyzed before the present Parker Route was selected. Combined

construction and operating costs of the Parker Route were the lowest of the six routes finally considered, and it is estimated that over $218,000,000 will be necessary for present and near-future construction requirements. Money to start operations immediately is available as the Metropolitan Water District voted its $220,000,000 bond issue last September and the Reconstruction Finance Corporation has pledged to purchase these bonds up to an amount of $40,000,000. Work now is under way on the construction of the transmission line along the aqueduct site and preparations will be completed for beginning work on the tunnels early this year.

To appreciate the magnitude of the project, consider that the aqueduct involves the construction of a dam across the Colorado River approximately 90 miles below the site of Hoover Dam, over 84 miles of concrete-lined tunnel, 54 miles of conduit, 75 miles of lined canals, 24½ miles of concrete pipe line, in all totaling over 240 miles, from the Colorado River intake to the Cajalco reservoir near Riverside, from which point distribution to the various cities will begin. The aqueduct traverses a country alternately desert and mountainous; plans include raising the water from an elevation of 450 ft. to an elevation of 1,817 ft. in a series of pumping plants along the route.

The main aqueduct is designed to deliver an average flow of 1,500 sec.-ft., which, with allowances for losses, brings the peak capacity to 1,605 sec.-ft. Canals, conduits and tunnels have been designed for this flow, the latter two to be roughly 16 ft. in diameter. The canal is to have a bottom section. 22 ft. in width, with sides having a 1½ to 1 slope, and is designed to carry water at an 11-ft. depth.

Preliminary construction activities include the construction of permanent gravel roads for transporting men, machinery and materials along the site of the aqueduct, field headquarters buildings, living quarters for construction crews, telephone and water supplies and adequate power facilities. As the work progresses, crews will be employed at numerous points along the entire aqueduct to speed its completion.

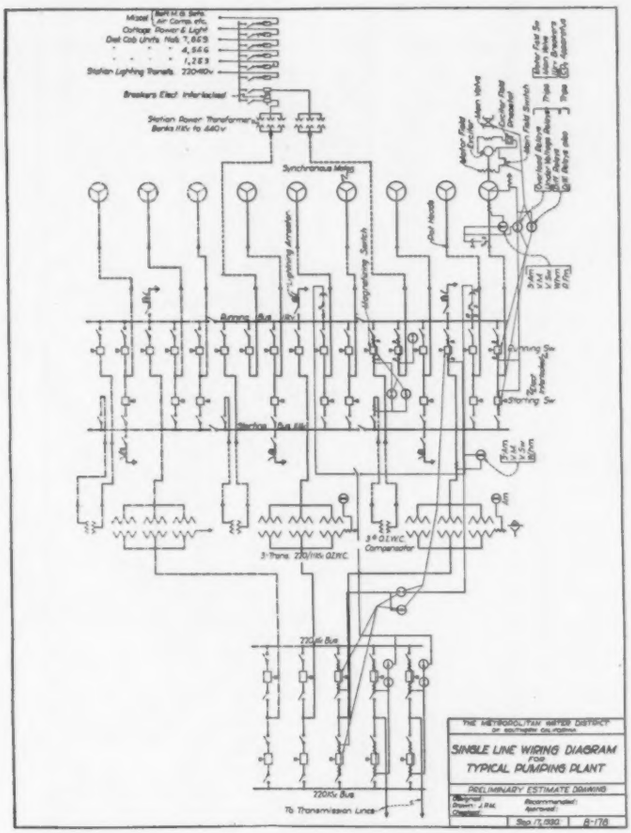


Fig. 1—One-line diagram of the switching structure and bus arrangement at a proposed pumping plant on the aqueduct

In a project of this type, where much excavation, material handling and concrete placing is necessary, electric power has proved advantageous in practically all instances: In the tunnels, compressors, muckers, blowers and mine locomotives; for the canal and conduit work, draglines and shovels; in the quarries and mixing plants and in serving camps where workers are housed, electricity has been found to provide better working and living conditions, as well as speeding activities economically.

The decision to make electric power available throughout the length of the aqueduct was made only after careful comparison of the cost of doing the work electrically with that of doing it by other means. It was found that if combustion engines could be justified for major pieces of equipment such as compressors and draglines, there would remain a great variety of jobs which would have to be done either by the use of a multiplicity of small internal combustion units often located in most inconvenient spots, requiring constant attention and much water valuable in this arid district, or else by electricity supplied by small engine-driven generators. The aggregate cost of operation and maintenance of this multiplicity of small, individually-driven units amply justifies the substitution of electric power supplied through some large central source.

Consideration then was given to the question of whether the necessary power should be obtained from one or more diesel plants located along the route of the aqueduct, from a steam plant to be built by the district near the sea coast, or from existing power sources in southern California. Bids received on the three alternatives showed that power purchased at wholesale from three of the large operating companies in southern California would be most economical. Accordingly, a contract was executed with the Southern California Edison Co., Ltd., the Los Angeles Gas and Electric Corp. and The Southern Sierras Power Co. for delivery of power to the district at 63 kv. at Colton, Calif. It is estimated that the total demand will be between 15,000 and 25,000 kw. when construction activities are at their height.

No electric power lines are available in the desert region traversed by the aqueduct. It therefore will be necessary for the district to build its own transmission line from Colton to points where power will be needed along the route. With the present plan, a 63-kv. transmission system will serve five substations located at approximately equal intervals along the route. Substations, which will have a capacity of approximately 6,000 kw. each, will transform primary power for 34.5-kv. distribution feeders which will run as close as possible to the site of the work to be done. Selection of these voltages was made after an economic study of the distribution system. It was found that voltages of 11.5 kv. or 16.5 kv. were inadequate because of the 20- to 30-mile length of many of the feeders. On the other hand, owing to a marked increase in the cost of 63-kv. transformers as compared with 34.5-kv. transformers, it did not pay to eliminate the distribution system altogether and to serve each individual construction load from the small 63-kv. transformer banks. The selection of the 34.5-kv. distribution system has the additional merit of allowing the main 63-kv. transmission system to be kept away from the aqueduct route except at substation sites, thus eliminating many hazards due to blasting, draglines, etc.

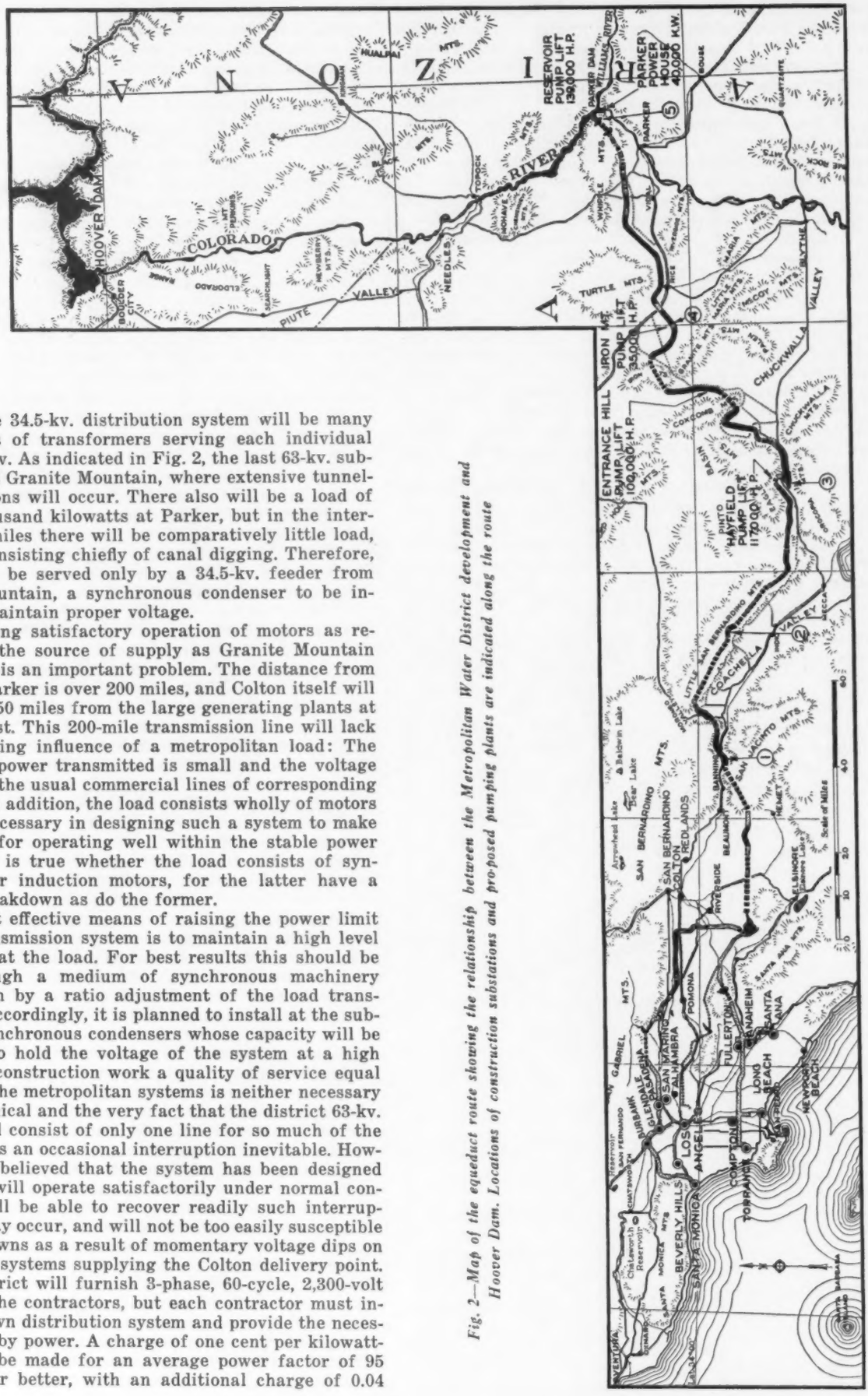


Fig. 2—Map of the aqueduct route showing the relationship between the Metropolitan Water District development and Hoover Dam. Locations of construction substations and proposed pumping plants are indicated along the route

Along the 34.5-kv. distribution system will be many small banks of transformers serving each individual load at 2.3 kv. As indicated in Fig. 2, the last 63-kv. substation is at Granite Mountain, where extensive tunneling operations will occur. There also will be a load of several thousand kilowatts at Parker, but in the intervening 50 miles there will be comparatively little load, the work consisting chiefly of canal digging. Therefore, Parker will be served only by a 34.5-kv. feeder from Granite Mountain, a synchronous condenser to be installed to maintain proper voltage.

Maintaining satisfactory operation of motors as remote from the source of supply as Granite Mountain and Parker is an important problem. The distance from Colton to Parker is over 200 miles, and Colton itself will be at least 50 miles from the large generating plants at the sea coast. This 200-mile transmission line will lack the stabilizing influence of a metropolitan load: The amount of power transmitted is small and the voltage lower than the usual commercial lines of corresponding capacity. In addition, the load consists wholly of motors and it is necessary in designing such a system to make provisions for operating well within the stable power limit. This is true whether the load consists of synchronous or induction motors, for the latter have a definite breakdown as do the former.

The most effective means of raising the power limit on the transmission system is to maintain a high level of voltage at the load. For best results this should be done through a medium of synchronous machinery rather than by a ratio adjustment of the load transformers. Accordingly, it is planned to install at the substations synchronous condensers whose capacity will be sufficient to hold the voltage of the system at a high level. For construction work a quality of service equal to that of the metropolitan systems is neither necessary nor economical and the very fact that the district 63-kv. system will consist of only one line for so much of the route makes an occasional interruption inevitable. However, it is believed that the system has been designed so that it will operate satisfactorily under normal conditions, will be able to recover readily such interruptions as may occur, and will not be too easily susceptible to breakdowns as a result of momentary voltage dips on the utility systems supplying the Colton delivery point.

The district will furnish 3-phase, 60-cycle, 2,300-volt power to the contractors, but each contractor must install his own distribution system and provide the necessary standby power. A charge of one cent per kilowatt-hour will be made for an average power factor of 95 per cent or better, with an additional charge of 0.04

mills for each one per cent by which the average power factor falls below 95. The penalty thus imposed for poor power factor will make it necessary for contractors to give careful consideration to the type and location of equipment used in the work.

In the temporary power system, it is contemplated there will be 323 miles of 66-kv. transmission line with an additional 270 miles of lower voltage distribution line. The construction of a portion of the 66- and 33-kv. lines already is under way and their completion will signalize the starting of actual excavation in the San Jacinto tunnel.

To complete the project will require possibly six years work, and it is estimated that the activity during this period will employ an average of 10,000 men directly on the scene of operations, together with giving employment to thousands in industries which will supply materials and fabricate and transport them to the site. As previously stated, the aqueduct will deliver a billion gallons of water daily, which must be raised a total of some 1,600 ft. in five pumping plants located along the route. The tremendous amounts of energy necessary to perform this work will be supplied from generating facilities at Hoover Dam and supplemented with certain power producing stations on the aqueduct. With the completion of Parker Dam, which will raise the level of the Colorado River about 72 ft., some 40,000 kw. will be available, approximately half of which will be allocated to Arizona and the remainder to the Metropolitan Water District for use in pumping. Raising the water from the river to the Copper Basin reservoir involves an average lift of 550 ft., which will require 139,000 hp. of pumping capacity. Seventy miles further along the aqueduct, Iron Mountain pumping station, with a lift of 137 ft., will require approximately 34,500 hp. of installed capacity, and at the 112-mile mark Entrance Hill pumping station will require an installed capacity of over 100,000 hp. to lift the water 415 ft. so that it may resume its course into Hayfield reservoir. Water from Hayfield reservoir will be pumped 460 ft. higher to the summit of the aqueduct route, which will require approximately 117,000 hp. The remaining distance to Cajalco reservoir is on a gravity route. At the Cajalco reservoir further distribution of the water may be made to develop approximately 46,000 kw. at some future time.

The quality of the water has been subjected to an exhaustive engineering analysis. As reported by the Colorado River Aqueduct Engineering Board of Review, silt and a rather wide variation in mineral content from the flood to dry seasons are the two most important problems to be solved. Sewage and industrial pollution are negligible factors due to the low population density in the area drained by the river. Practically all of the silt will be removed by sedimentation while the water is stored in the reservoirs at Hoover Dam and Parker Dam, and along the aqueduct route it is expected storage will also tend to equalize the mineral content.

Pumping plants along the aqueduct as now contemplated are based on the use of single-stage pumps up to 275 ft. per stage of head. When the head exceeds this amount, two or more separate pumps, each operated by its own individual motor, are to be used in series. A typical pumping plant as covered by the specifications includes a 220-kv. double-bus substation from which three banks of 220/11-kv. oil-immersed, water-cooled transformers are fed. Pump motors are to be grouped in units of three, each group being fed from one bank of transformers through common starting and running 11-kv. buses. At present, it is contemplated that the synchronous motors will be used for all pump drives in the system. In designing these plants, the size of individual transformers was not allowed to exceed 12,000 kw. on account of difficulty in transportation in this area. This size meets all requirements satisfactorily and fits into the proposed grouping of units satisfactorily. To reduce torque during starting, pumps will be drained and motors started on reduced voltage.

The bulk of the power for pumping must be supplied from Hoover Dam through a 400-mile, 220-kv. transmission line. This voltage is in line with recent practice for the amounts of power and distance of transmission.

As contemplated, the transmission line will be single circuit mounted on steel towers, using steel-reinforced aluminum conductors. The 220-kv. system will feed substations located near the pumping plants. Outdoor transformer and switching equipment will be used wherever possible.

While the construction operations will provide unusual opportunities for electrical application, the operation of the completed project involves the use of electrical energy in quantities which far surpass any previous application of this type. Approximately 350,000 hp. will be the average load of pumping plants on the aqueduct. The high concentrations of power, together with the fact that the entire load is of synchronous motors, makes it one of the most interesting and impressive applications of its type in the world.

Frank E. Weymouth, formerly chief engineer of the U. S. Bureau of Reclamation, is in charge of the project, and Julian Hinds, assistant chief engineer and chief designing engineer, is second in command. J. M. Gaylord, formerly superintendent of hydro generation for the Southern California Edison Co. Ltd., is electrical engineer in charge of all electric construction and operations.

Estimated Costs and Yearly Construction Expenditures

Total cost of Parker diversion dam	$ 13,900,000
Total cost of main aqueduct	121,000,000
Total cost of power transmission lines	8,200,000
Total cost of pumping stations	13,500,000
Total cost of terminal storage	17,000,000
Total cost of distribution	45,000,000
Total Cost of Project	$217,600,000
Expenditures during the first year	$ 9,000,000
Expenditures during the second year	18,000,000
Expenditures during the third year	29,000,000
Expenditures during the fourth year	46,000,000
Expenditures during the fifth year	55,000,000
Expenditures during the sixth year	60,600,000

Partial List of Equipment Necessary for the Construction and Operation of the Aqueduct

220-kv. transmission line	400 miles
66 kv. transmission line	300 miles
33-kv. transmission line	275 miles
Distribution copper	2,500,000 lb.
Construction substations (6,000 kw.—66/33-kv.)	5
Pumping station substations (totaling 350,000 hp.)	5
Generating plants (40,000 kw. installed)	1
Construction equipment*	
Electric mine locomotives	125
Tunnel shovels and mucking machines	100
Excavators and draglines	40
Hoists (over 50 hp.)	30
Cableways	2
Air compressors	110
Tool sharpening outfits	70
Ventilating fans and blowers	75
Gravel and screening plants	25
Concrete mixing plants	60
Refrigerating plants for camps	75
Motor generator sets	40

*Contractors will set up their own 2,300-volt distribution stations and will supply miscellaneous construction equipment such as cables, motors, control, etc. No figures on the quantities of such materials are yet available.

Commercial Forces Dig In

MORE than once the economic struggle of the past three years has been likened to the world war. As in that titanic period of destruction, the world at first felt that the depression could not last six months; like the war, it is dragging on into its fourth year. And so, with the spring of 1933, one finds the electrical industry digging in for the spring maneuvers sure to come, for the dragging days of summer, and, if need be, for next winter. And like the allied forces during that fourth year, a determined counter-attack is planned on many strategic fronts.

During 1932 there were many a Verdun fought on the economic field. Redoubtable companies grimly held their positions with the battle cry of that other conflict: "They shall not pass!", the "they" in this case being the forces of further deflation, demoralization and liquidation. On some fronts the load line gave, with serious kilowatt-hour losses suffered. In the industrial districts, on some agricultural fields, to some extent in commercial centers, retreat was forced to less consumption, even to sealed meters.

On the domestic markets, however, some real gains were made. In lighting, too, some of the lost load was regained, particularly in one or two brilliant drives.

Casualties in sales staffs, brought about by sales budget explosions, were more than replaced by the general mobilization of the entire personnel of many companies. These new forces were armed with prospect slips, inspired by bulletins, and trained in meetings to supplement the salesmen in the field. The California Oregon Power Co., for example, had 75 per cent participation from its entire force in all of its scattered outposts during a determined campaign with kitchen lighting units. Another company assigned one kilowatt per man, and nearly every man got his kilowatt.

Everywhere, power company forces last year recruited, and this year will continue to recruit, volunteer dealer battalions. They have found in them many strong individual fighting units, and their pugnaciousness and internecine trade difficulties have fitted them especially well in skirmishing warfare, if only this fighting spirit can be redirected from within the industry to the common foe outside the industry. These valuable scouts and marksmen, when organized, trained in the industry's armies, often render distinguished service to the cause. So independent are they, however, that mutiny and dissension are incipient unless their whole-hearted support and enthusiasm is won. Commanders everywhere seem to be making it their personal responsibility to win this force as volunteers.

Gas warfare took its toll in 1932, as competing fuels were loosed either from "cans" or pipe lines sapped into hitherto-unaffected areas. The casualties among electric ranges, electric heating and farm pumping plants were the chief losses, although in 1933 a strong offensive of gas engine, municipal projects and isolated plants is expected, aided by a menacing political flank which seeks to shift some of the high cost of municipal government onto electric consumers, rather than make any retreat from its strongly-intrenched taxation positions.

Of the new weapons that will be brought into play to recapture loads, air conditioning is the most spectacular. Yet it has been significant how even the forgotten appliances and devices have been brought back into the commercial drive upon the market. The sewing machine, the vacuum cleaner, the washing machine and

A Strong Policy for 1933

As expressed by the Valley Electrical Supply Company, merchandising subsidiary of the San Joaquin Light & Power Corp., in the foreword and summary of its 1933 sales program

The readjustments made necessary by unsettled economic conditions will leave their effect on distribution methods. As we emerge from this depression, new merchandising conditions must be met.

To meet these conditions successfully and retain for our industry its full share of consumer business, will take the combined energies and intelligence of all its branches —the manufacturer, the wholesaler, the dealer and the utility. Goods must be moved more quickly and economically to the consumer. This cannot be accomplished by any one branch of the industry, but the burden will fall upon the retail stores because they are in direct contact with the consumers.

We believe it is good business practice that the utilities cooperate with the retailers and help them in meeting this new merchandising condition; that the utilities should not only carry on pioneering, educational and promotional work with its consumers, but should be extremely active in introducing new selling plans and disseminating new merchandising ideas to the dealers over the territory it serves.

The utility should assume the leadership in directing the merchandising of the products consuming its energy along sound, constructive, ethical merchandising lines on a "live and let live" basis, that will encourage the aggressive activity of all dealers handling appliances that consume its products.

* * * * * *

This, then, is our 1933 program: To build into our own and our dealers' organizations tried and tested merchandising plans. To imbue these organizations with practical, progressive merchandising ideas gleaned from a nation-wide contact, to the end that we can meet the new merchandising conditions successfully, and sell merchandise and build load to the best interest of our consumers and our industry.

to Hold the Load Lines Intact

the hand iron have been able to penetrate beyond the wire into the home as they have not done for many years. Many of the other devices have been rendered newly effective by redesign, with automatic features, better styling, added versatility in action. In order to meet the gradual advance of the gas range, which has been adopting the electric range uniform and appearance and some of its most potent sales weapons, the electric ranges have been advanced still further in finish, control and speed. Water heating has held its fuel-bombarded outpost by off-peak protection and better insulation.

Refrigeration continued to make strong gains, and in many quarters was allying with it and lending its field experience and dominant driving power to the electric range in the formation of joint range and refrigerator war councils.

Some of the most insidious attacks upon the industry came from a type of ghoulish guerrilla sales bands, who preyed upon both the customers and the industry, breaking down confidence and seeking to exchange reputable and effective installations with shyster devices which rob both customer and industry. A foreign lamp invasion likewise harrassed the industry, but, with immediate forcing of the invaders into defensive positions by the lighting industry, there appears to be a bottling-up of such antagonistic units for the time being.

In the following pages, a survey of the field is reported by those in charge of the firing lines: commercial executives of central stations. The intelligence has been assembled from each sector so that a composite view of the situation in each may be obtained. Thus, from the Northwest Sector, with nine divisions reporting, despatches reveal the industry to be holding its own, with some agricultural and lumbering losses, but with forces reorganizing for spring and summer offensives.

Likewise in the Mountain Sector, hard-won territory, the odds are balanced fairly well, at least in the divisions heard from. The Central Sector of the Pacific Coast probably held better than did any of the others, even making appreciable gains in some terrain. The Southwestern Sector, according to five reporting divisions, has had a nip and tuck struggle with load raiders, but is maintaining ground.

In only one or two cases did the domestic consumption figures actually show retreat, although several companies reported a standstill. Many more showed gains ranging from one or two to as high as 39 kw.-hr.

Because of incomplete returns from many fronts, a separate table of 1932 range, water heater and refrigerator sales and 1933 quotas was not compiled. In the individual reports and the sector summaries will be found company figures. A remarkable fact will be evident to the astute, statistically-minded: Water heater figures in many localities were practically one for one with ranges, a ratio never before attained, even in the West. This can be attributed only to growth in the acceptance of both range and water heater as adjuncts to the real electrification of the home. Where purchasing power to buy a range existed, it was not difficult to stretch it to include the water heater, too.

In general, the 16,000 or more ranges sold in the West can be considered a decisive victory for electric cookery. Never in the history of the range has the competition been as strategically favored. Yet, with lower cost appeals, both as to ranges and operating costs, and despite beautification of the gas range to bring it within favor as an attractive piece of kitchen furniture, despite reduced incomes, 16,000 electric ranges were sold.

Because of the difficulty of gathering figures on refrigerator sales, dealers and distributors in many localities being loath to release this information, the total sales of refrigeration units in the eleven Western states cannot be computed accurately. But, judging from the records of those companies who were able to obtain complete figures, the West did fairly well.

With the coordinated, allied forces of the industry facing common foes in this spirited fashion, the outlook is hopeful that, even if the troops are not out of the trenches by Christmas, at least the load lines will have held, and in many sectors advanced.

Kw-hr. Per Residential Consumer

COMPANY NAME	1932	1931	1930	1929
B. C. Electric Ry. Co.—Victoria	740	740	710	700
California Oregon Power Co.	1,875	1,884	1,879	.....
Central Arizona Lt. & Pwr. Co.	745	727	665	592
Idaho Power Co.	.....	.....	1,447	1,252
Los Angeles Bur. Pwr. & Lt.	595*	557	521	475
Montana Power Co.	739	729	695	627
Northwestern Electric Co.	1,294	1,259	1,195	1,058
Pacific Gas and Electric Co.	756.3	758.6	723	653
Pacific Power & Light Co.	1,341	1,310	1,184	901
Portland General Electric Co.	1,045	1,036	984	935
Public Service Co. of Colo.	.....	460	424	383
Puget Sound Pwr. & Lt. Co.	1,095	1,115	1,107	954
Salt River Valley Water Users' Assn.	.....	1,569	1,509	1,241†
San Diego Consol. Gas & Elec. Co.	636	597	551	500
San Joaquin Light & Power Corp.	947	942	916	836
Seattle Lighting Department	1,104	1,102	1,084	1,033
Sierra Pacific Power Co.	.....	885	781	716
So. Calif. Edison Co. Ltd.	728	720	691	637
So. Sierras Power Co.	940	910	807	694
Tacoma Dept. of Lt. & Pwr.	1,551	1,551	1,494	1,337
Utah Power & Light Co.	.....	772	725	566
Vallejo Electric Lt. & Pwr. Co.	.....	747	609	.....
Washington Water Power Co.	1,806	1,804	1,710	.....

All figures based on N. E. L. A. contest rules unless otherwise noted.
†Not on N. E. L. A. basis. *Estimated.

Northwest—

THAT old question, "How far is up?" has been changed by the power companies of the eleven Western states to "Just how good is this 1932 record?". There is only one answer to both questions.

Few, if any, persons knew at the beginning of 1932 just what conditions would obtain throughout the year, or just what the situation would be at the beginning of 1933. When quotas were made for 1932, most commercial executives were too optimistic; their sales forces were unable, in general, to sell quota. But does that mean that a good job was not done, under the conditions? Perhaps some companies which fell far below quota actually made an excellent showing in light of the conditions prevailing in the territory.

In the Northwest, the combined total of all electric ranges sold by those companies reporting, and in some cases not counting dealer sales, was more than 10 per cent of all the ranges sold in the United States. There is no doubt that a good job was done.

As usual, water heater sales were high in proportion to range sales. With incomplete returns, the ratio is better than 1 to 2, far higher than the national ratio. Pacific Power & Light Co. sold more water heaters than ranges; Puget Sound Power & Light Co. sold 75 per cent as many.

It is heartening to read the reports of the commercial officers of the central stations, to find the lines, "We are not reducing our commercial activity in any way," or "We shall maintain the same aggressive attitude toward load building," or "With new plans, we will push sales harder than ever before." Interpreted, these lines all mean the same thing, "We're not scared . . . and we're not going backwards."

British Columbia Electric Railway Co., Ltd.—Victoria

By S. J. HALLS
Manager, Light and Power Department

WITH an increase of 308 lighting consumers, adding a connected load of 2,061 kw., and the addition of one power consumer, although power load is off 42 hp., our sale of energy has been fairly well maintained and the activities of the merchandise department are satisfactory.

We sold 134 ranges and the dealers sold 19; the company quota for 1933 is 150. The company sold 44 and the dealers 7 water heaters, and the 1933 quota is 75. We have only the company refrigerator sales of 41 units to report, with the 1933 quota at 100.

During the three months ended July 15, the company carried on a free range wiring campaign under which purchasers were given free wiring if the range was sold by the company and $20 toward the wiring cost if the range was bought from a dealer. While quota was not attained, the results of this campaign are considered fairly satisfactory. It is expected that when final figures for the year are available, we will find that merchandise sales volume will compare reasonably well with the volumes of the past two or three years.

Special attention was given to the development of cooperation among our employees, and the sales scheme introduced in 1931 was continued.

Our kilowatt-hour consumption figures show that the general use of electricity by the public is well maintained. We believe this augurs well for improved business conditions during the coming year, and we are laying our plans to take as much advantage of this as possible.

Northwestern Electric Co.

By J. C. PLANKINTON
Sales Manager

WHILE commercial and industrial loads dropped 2,277 kw. in the year, increases in other classifications offset this and the company finished 1932 with a connected load 591 kw. greater than in 1931. Industrial lighting and heating promotion work was pushed continuously, but no large loads were added during the year.

Of 538 ranges added to the lines, dealers sold 188; we expect that dealers will sell half of the 540 quota set for 1932. The company sold 110 and the dealers 48 water heaters; the 160 quota for 1933 is expected to be made half by dealer, half by company sales. The dealers sold 600 refrigerators and expect to sell 750 in 1933.

▼

The California Oregon Power Co. and Mountain States Power Co.

By GLENN L. JACKSON
Vice-President in Charge of Sales

INFORMATION contained in this report will have to do with both the above-named power companies. California Oregon suffered a 396 loss in total customers, although slight increases were made in residential and commercial lighting groups. Mountain States lost 1,433 customers.

In every field, California Oregon was below 1931 figures for connected load, but Mountain States showed an increase in domestic heating and cooking and commercial lighting and appliances.

The California Oregon merchandising department sold 186 ranges and the dealers sold 55, for a total of 241; water heater sales were 140 by company, 20 by dealers. Company sales of refrigerators were 125, and the dealers sold about the same number.

Mountain States sold 378 and its dealers 20 ranges, for a total of 398; 220 water heaters and its dealers 9; 290 refrigerators to its dealers' 195, for a total of 485. Practically all of the range sales by dealers came during a special activity in the spring of 1932, when a range was sold at $99.50 through the dealers' stores as well as our own, and on which the company carried the paper.

▼

Lighting Department, City of Seattle

By J. D. ROSS
Superintendent

CITY LIGHT sold and delivered 972 ranges on its lines and dealers sold an estimated 100, for a total of 1,072. City Light sold 420 water heaters on its lines, but dealer figures are not known. Of the 700 refrigerators sold, 93 came from our department. Two hundred customers were added to the system during the year.

▼

Portland General Electric Co.

By A. C. McMICKEN
General Sales Manager

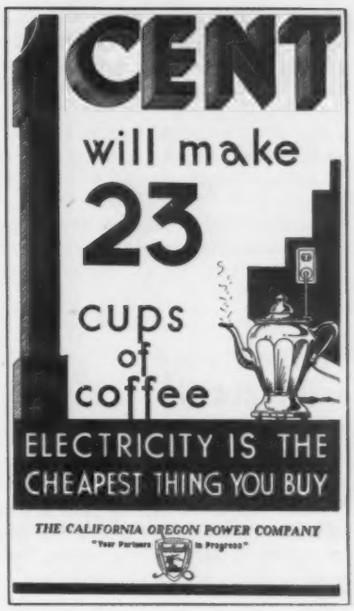
IN THE domestic lighting and cooking field, we show a net loss in the number of domestic customers of 0.3 of 1 per cent. However, we do show a 3.8 per cent increase in the number of domestic customers using ranges. In all other classifications, such as commercial lighting and power, and industrial lighting and power, we show not only decreases in consumers, but also in energy sales. In the residential classification only has our revenue held up, and this in spite of the fact that no new customers have been added by reasons of line extensions into either rural or urban territory.

Approximately 1,025 ranges were added to our lines, about 50 per cent by dealers. We have budgeted 1,200 for 1933, and believe that dealers again will sell half. Water heater sales were unsatisfactory largely because of the fact that we endeavored to sell only booster-type installations at prices from $100 up and seemed unable successfully to meet the competition of gas water heating equipment at much lower first cost. Approximately 300 installations were made. We intend to put much more effort behind water heating during 1933 and hope to add 500 to 600 booster-type installations to our lines.

We hope, through the newly-formed

ELECTRIC WASHING
is but one of many services and conveniences brought to your home over the wires of the Pacific Power & Light Company at very reasonable cost. The average electric washing bill is less than 20c a month.
WHO WANTS TO SCRUB FOR 2c AN HOUR?
● If you scrub clothes the old-fashioned way you are working for 2 cents an hour—because that is all it costs to operate a modern electric washing machine.
You can attach an electric washer to an electric outlet, snap the switch, and stand by while your clothes are washed, rinsed and wrung out, ready for the line!
The new electric washers are gentle on the clothes. They do a thorough cleaning job. White clothes come out snowy. Colored clothes emerge fresh and bright.
For your health's sake, for your beauty's sake, let an electric washer do your washing. Your dealer can furnish you one on extremely liberal terms. Let him explain them soon—on your very next trip down town.
(Dealer's Names)
THIS ADVERTISEMENT IS SPONSORED BY THE PACIFIC POWER & LIGHT COMPANY TO PROMOTE THE USE OF DEPENDABLE ELECTRICAL MERCHANDISE AND TO INFORM YOU WHERE IT CAN BE PURCHASED IN THIS COMMUNITY

WHAT WOULD YOU DO WITHOUT Electricity?
It would be a calamity to be without electricity—we would all realize how indispensable it has become. One reason it has had such universal adoption in the Puget Sound Power & Light Company territory is its cheapness.
The cost of electric service has steadily gone down until today its cost is only one-third of what it was in 1913. This company has kept faith with its customers through voluntary rate reductions in all parts of its territory. See the G-E Hotpoint Ranges at our stores. Priced as low as
SEE YOUR DEALER FOR ELECTRICAL SUPPLIES
PUGET SOUND
Power & Light Company



How the Northwest Sells

Advertising is a potent weapon in building sales of electrical appliances and service in the Northwest, judging from the results of 1932 load-building campaigns and the important part advertising of all sorts played in them. Here are typical pieces of copy, all stressing "dealers, too" and one (Pacific Power & Light Co., on electric washing) even sponsoring the advertising for its dealers. Puget Sound Power & Light Co. rates a double place on this page because one piece of copy answers any rate critics by pointing out the downward trend, asks a leading question to which the answer is "I don't know," and still manages to snuggle in a sales story on electric ranges. The other indicates why water heater sales are so great in the Northwest, as compared with range sales, for range copy stresses water heaters, too, and water heater copy stresses ranges, too. In the case of both advertisements, a clever double selling job is accomplished.

On further pages of this section, other advertising messages of central stations will be displayed, because, in pulling themselves through the depression, they have used advertising and personal selling as never before.

MORE THAN
100,000
Washington Housewives and Mothers
Use Electric Cookery
See the new Electric Ranges now on display—
Learn how easy it is to own one—
How economical to operate!
● AN ELECTRIC RANGE spells freedom and economy to some neighbor of yours. No need for you to wonder HOW she has so much time—why she is through her kitchen chores so soon. Her Electric Range is the answer because it is clean, fast and fully automatic.
New models and lower prices are here for 1932, and there is an Electric Range for every requirement whether you desire one for an apartment or a large home. You will have new freedom and tastier meals when you use Electric Cookery.
We invite you to inspect the new Hotpoint, Westinghouse, or Crawford Ranges at our stores, or other makes at stores selling Electric Ranges.
Now a 24-HOUR HOT WATER Service
It is now possible for our customers to have 24-hour hot-water service at the extremely low rate of only eight-tenths of a cent per K.W. H. Have plenty of hot water any time you want it without even turning a switch. Investigate this service, ask any of our representatives, or
SEE YOUR PLUMBER, ELECTRIC DEALER OR ARCHITECT
PUGET SOUND
Power & Light Company

B.C. Electric
APPLIANCE STORES
GREEN TAG Sale!
..Oddments at Clearance Prices
SATURDAY to MONDAY ONLY!
All this Merchandise is Subject to Prior Sale
THE spectacular values in this mid-month sale are procurable through your nearest B.C. Electric Appliance Store. Stores in Vancouver, North and West Vancouver; New Westminster, Abbotsford, Chilliwack. Shop early!
B.C. ELECTRIC RAILWAY CO. LTD.

Electric Refrigeration and Cookery Council of Oregon, to accomplish much more in both range and refrigerator sales in 1933, and have a much better cooperative setup. Among the things under consideration by the council is a combination range and refrigeration show in Portland and other Oregon cities about April 1. The council also has under consideration the sponsoring of 25 cooking schools in 25 cities, to be participated in by all dealers and distributors.

▼

Pacific Power and Light Co.

By GUY E. DAVIS
Assistant Merchandise Manager

OUR commercial department activities for 1933 will be just about the same as for the past year: We plan to be active in all general items, but our major efforts will be on the load-building group. Our total net merchandise sales for 1932 were $196,113; quota for 1933 is $138,000. We feel that this is a very conservative estimate and hope to be able to go well beyond this figure.

Although residential kw.-hr. sales increased, 1,108 customers, mostly domestic, were lost during the year.

Company range sales during 1932 were 234; dealers sold 135. Company water heater sales were 323; dealers sold 135. Company refrigerator sales were 146; dealers sold 577. Quotas for 1933 are: ranges, 250 company and 125 dealer sales; water heaters, 200 company and 100 dealer sales; refrigerators, 150 company and 400 dealer sales.

Our plans for dealer cooperation during 1933 have not been worked out in detail, but it is our intention to do everything to encourage all outlets to be more active.

▼

Puget Sound Power and Light Co.

By S. P. MACFADDEN
Vice-President

MERCHANDISING activities during 1932 remained secondary to the load development program, in which we added 830 customers in residential, farm and commercial groups, lost 151 industrial and miscellaneous customers for a net increase of 669.

Active merchandise sales were confined to the three major appliances, for which there was a fall and spring campaign. Of ranges, the company sold 1,693 and dealers 736 for a total of 2,429; combined quota for 1933 is 2,500 units. About the same percentage held with water heaters, the company selling 1,048 and the dealers 721 for a total of 1,769; this year the company expects to sell 2,000, the dealers 1,000. In refrigerators, the dealers sold about 2,500 and the company 542 for a total of 3,042. At the end of the year, we expect to have sold 4,000 more between company and dealers.

Throughout the year, a consistent effort was made to encourage and develop sales of other electrical appliances through dealers. A load development program was laid out which included seasonal activities on domestic appliances, farm equipment, commercial appliances and improved lighting. All company salesmen were placed on a straight salary basis, effective Feb. 1, and the sale of domestic, farm and commercial appliances through dealers was promoted by the salesmen and by our advertising. We also incorporated an employee tip plan, with equal credit given to salesmen and employees for

THE COST OF ELECTRICITY in the Puget Sound Power & Light Company territory is so low that many do not realize how small the cost of operating an individual appliance really is. It is with this thought in mind that the following figures have been compiled. This information is for the use of dealers and their salesmen. It is desirable that all people interested in the sale of electrical appliances familiarize themselves with operation costs and make use of this knowledge in selling.

DOMESTIC USES

REFRIGERATOR	4c a day
WASHER	2c a week
IRONER	10c a week
CLEANER	5c a month
SEWING MACHINE	2c a month
RADIO	2c a day
AIR HEATER (AVE. SIZE)	1c to 5c a day
RANGE	1c a meal per person
SUN LAMP	1c a day
TOASTER	1c a day
PERCOLATOR	1c a day
WAFFLE IRON	1c a batch
ELECTRIC IRON	4c a week
FOOD MIXER (Small)	1c a week

* Additional information given on back page.

One of the most effective enclosures used by Puget Sound Power & Light Co. was this pamphlet showing how cheaply an electric appliance can be operated

prospects and sales, regardless of whether the sale was made by our salesman or by a dealer. We also launched an extensive Christmas promotional campaign.

At the present time we are working on a plan to organize the various branches of the industry into groups which are interested in the same lines. For instance, at present we are forming a unit of jobbers and manufacturers who are interested in improving lighting. We are cooperating with this organization and the dealers in selling better lighting equipment throughout our territory.

We have continued our plan of giving electrical dealers and stores prominent place in our radio, billboard, direct mail and newspaper advertising.

▼

The Washington Water Power Co.

By LEWIS A. LEWIS
Assistant General Manager

ADDED to our lines during 1932 were 458 ranges, 368 water heaters and 1,375 refrigerators. Quotas for 1933 are 400 ranges, 600 water heaters and 1,200 refrigerators. Moreover, we are not in any way reducing our commercial effort.

Our plans for residential load building will be tied in very closely with a merchandising policy designed to cooperate more closely with dealers than in the past. A policy has been outlined which has met with approval. We hope to continue as a leader in merchandising load-building devices, but only along lines that any active dealer can sell at a profit to himself and better than were we to withdraw from the field.

We will continue our load-building program, cooperative dealer advertising, radio broadcasting and dealer helps. Air conditioning will be given a good deal of attention: exhibits will be made, lectures prepared and assistance given architects and dealers. Our lighting department is doing layout work for contractors and is soliciting improved lighting, which is turned over to contractors for execution.

Aside from the dealer cooperation referred to, we again will tie in with the National Refrigeration Bureau and Cookery Council.

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Mountain—

AGRICULTURE and mining are the chief load sources in the Mountain states—Montana, Idaho, Utah and Colorado. It is needless to recount what has been the fate of these two industries during the past year; to a great degree, it would seem as if their future is in the hands of the legislators. Farm relief legislation is impending; many mines, long closed, are being opened again, as frequent reports in EWEST news pages during 1932 show.

Naturally, geographic conditions militate against intensive electrification in much of the territory: There are few large cities or communities of any size and customers come by the mile.

But even the power companies serving this territory do a good merchandising job month in and month out. The few people of these four states, 1.2 per cent of the total national population, bought more than 5 per cent of the nation's electric ranges. Idaho Power Co. has a range saturation of 45.6 per cent, last year had a saturation of 49.3 per cent. This company has attained what most companies dream of.

Montana Power Co. in one month, September, sold 79,270 lamps with the help of its dealers. Utah Power & Light Co. and Public Service Co. of Colorado have engaged in a campaign to "not only sell, but to keep them sold." Repossessions are sold to those who cannot afford a new range, refrigerator or water heater, in a way which does not interfere with new equipment sales, thus killing two birds with one stone: The load stays on the lines and a serious financial problem is solved.

Perhaps the Mountain states are not inherently so fertile a field as other

states in the West, but merchandising skill and plain hard work make up for this deficiency.

▼

Idaho Power Company

By L. W. BRAINARD
Sales Manager

WHILE results secured during the year 1932 were far below the preceding year and below quotas set, it is impossible to estimate the volume of business that would have been lost but for the activities of the sales organization. We feel certain that revenue decreases would have been materially greater had it not been for the old business retained and the new business secured through consistent sales effort. Certainly, the earnings resulting from this activity have been most needed and it is felt the expenses occasioned were justified and that continued and increased sales activities in 1933 are warranted, even with no improvement in business conditions.

In preparing our 1933 program, we have borne in mind the importance, greater than ever, of securing **every increased dollar of additional revenue that can be had on a profitable basis.** The necessity of economizing is apt to dishearten the sales organization, and it, now more than ever, is in need of a continuous flow of enthusiasm from the management and company executives.

Even though Idaho Power sold 443 ranges and the dealers sold 437, a total of 880, we suffered a net decrease of 679 cooking customers, bringing the range saturation on our lines from 49.3 to 45.6 per cent. The same was true of water heating, where the company alone sold 698 units, but had a net loss of 448 water heating customers. Our water heater saturation now is 16.9 per cent.

Idaho Power sold 183 refrigerators and the dealers sold 965, a total of 1,148.

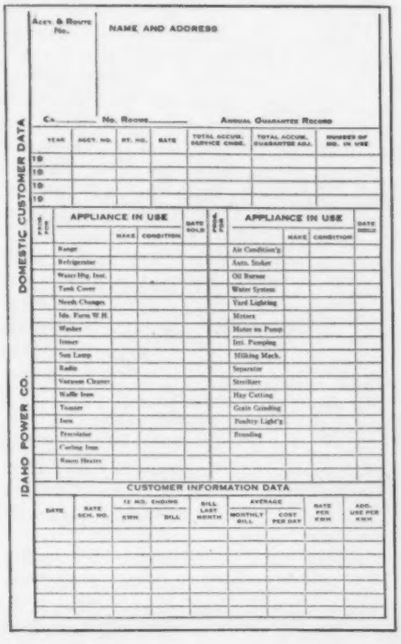
Some of our joint company-dealer merchandise quotas for 1933 are: ranges, 932; water heaters, 585; ironers, 236; refrigerators, 992; washers, 817; vacuum cleaners, 650; fans, 345; industrial motors, 195. Our dealer cooperative plans will be given no less attention than before, and our advertising will be set up to render assistance to dealers in our territory. Some portion of the advertising, featuring equipment which the company does not handle for resale, will be run entirely for assistance to dealers handling this equipment.

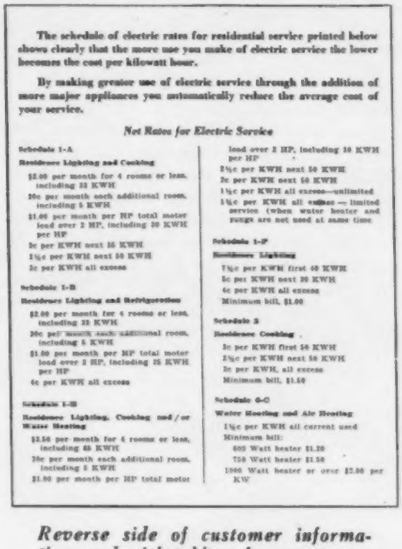
The new business program for 1933 anticipates a fine-tooth coverage of all customers in an orderly manner to uncover and capitalize on every new business opportunity, however small. The principal feature of this program will be an "Every Customer Contact" plan, with complete new business card record of every customer's account.

A similar card record has been in use for the past four years with varying degrees of completeness in various localities. Thus, this idea is not new in theory. The justification and value of the plan was not proved definitely until 1932, during which load-building results were much more difficult of attainment than in years preceding. During 1932, our records show definitely, with few exceptions, that in territories for which data cards have been kept regularly and completely, accomplishments were well above average; in fact, they were so far superior that we are justified in making the plan mandatory in 1933.

In addition to the data card, a customer information card has been added; this card bears information concerning the customer's account, as indicated by the headings, makes possible an easy approach and, it is felt, results in good will accomplishments as well as sales. Approach through this method results in greater willingness on the part of the customer to advise of appliances now in service and to express appreciation of the service rendered.

Idaho Power Co.'s data card




The schedule of electric rates for residential service printed below shows clearly that the more use you make of electric service the lower becomes the cost per kilowatt hour.

By making greater use of electric service through the addition of more major appliances you automatically reduce the average cost of your service.

Net Rates for Electric Service

Reverse side of customer information card with tables of current rates for operating combinations of appliances

▼

The Montana Power Co.

By S. P. HOGAN
Assistant Secretary

AT THE end of 1931 we had 51,378 customers, and at the end of 1932, 50,313, a loss of 1,065. Connected load suffered a drop, some 2,000 kw. in residential and 3,000 kw. in commercial classes.

Our commercial activities were largely a matter of constant work and they do not show any outstanding achievements. During each of the first nine months we carried on promotional campaigns, as, for instance, in February we featured mixers, in May, June and July we featured ranges, refrigerators and hotplates. During the last three months of the year we did not campaign any specific items, but attempted to reduce our obsolete and over-stocked merchandise. While no definite figures are available, we made a very good showing.

With 427 ranges added to the system in 1932, our 1933 quota is 322. Only 11 water heaters were added and 1933 quota is 6; since we have gone into the natural gas business we have discontinued any intensive campaign for electric water heating. During 1932 we sold 540 domestic refrigerators and 12 commercial units. Our quota for 1933 calls for 515 domestic and 10 commercial.

▼

Utah Power & Light Co.

By P. M. PARRY
Vice-President

OUR total volume of sales, considering conditions, was reasonably satisfactory. One problem that confronted the sales department has been that of merchandise sold but found necessary to repossess. Yet, this merchandise has practically all been resold and placed in other homes, and kept in active service, thanks to the activities of the sales department.

We believe that the lack of confidence necessary to business recovery reached a low point last summer, and that confidence in general has been materially restored, so that we can enter upon our 1933 program with greater assurance than we began 1932. In fact, in some parts of our territory, our sales for December, 1932, exceeded sales for December, 1931. We have every confidence that our total mer-

ALL-ELECTRIC SERVICE
Means this,
COOKING
WATER HEATING
REFRIGERATION
WASHING
CLEANING
LIGHTING and MISCELLANEOUS
ONE BILL FOR MANY CONVENIENCES.
HOME ENJOYMENT AND COMFORT BEYOND COMPARISON.
AND IT COSTS NO MORE!
Instead of this,
MONTHLY INVOICE
If you're still using old-fashioned methods in your home, figure the monthly total of your bills for cooking, refrigeration, water heating, washing, cleaning, and various other tasks that can be performed electrically.
Then compare these total costs with the one monthly bill of any of your friends who have switched to "ALL-ELECTRIC."
You'll find that there is practically no difference in cost—and that "ALL-ELECTRIC" service brings tremendous advantages in home comfort!
Yes, Sir, you enjoy these advantages. Begin NOW. Our combination step-down rate, which decreases as your use of electricity increases, offers you the benefits of quantity buying of electric service.
The purchase of a famous Hotpoint Electric Range, an Electric Water Heater that is absolutely carefree and a General Electric Refrigerator, or any of these up-to-the-minute servants, is made remarkably easy under our liberal time-payment plan.
WE BELIEVE THE "ALL-ELECTRIC" IDEA FOR YOUR HOME WILL INTEREST YOU. MAY WE MEET YOU AND TALK IT OVER? A PHONE CALL IS ALL THAT IS NECESSARY. YOU'LL BE UNDER NO OBLIGATION WHATEVER.
UTAH POWER & LIGHT CO.
EFFICIENT PUBLIC SERVICE

"We are campaigning the 'all-electric' idea," reports Utah Power & Light Co. And this is how it is done in advertising. Because the company pushed the three appliances together, total sales of each were almost equal

chandise sales for 1933 will equal and perhaps exceed sales for 1932.

Our salesmen enter 1933 with a fine spirit, knowing that sales will be difficult and that greater effort will be needed to obtain the volume goal for the year. We feel that the utilities must take a very positive and active leadership at this time in building up the market, which leadership will be reflected not only in increased sales to themselves, but also greater sales for dealers as well. Our 1933 program again calls for a continuous 12 months' activity, with the greatest sales effort to be placed on the three major appliances, ranges, refrigerators and water heaters. In addition to these activities, special campaigns will be carried on during the year at appropriate times in connection with smaller appliances. Such appliance activities in the last two years have been somewhat curtailed, with the thought that this might stimulate dealer sales. It has been found, however, that leadership by the utility in campaigns in connection with smaller appliances has tended to stimulate sales for such appliances and that dealer sales have increased rather than decreased.

During 1932 our range sales totaled a net of 605 ranges, in addition to which our sales department resold 448 ranges which had been repossessed during the year, making a total of 1,053 sales. It is estimated dealers sold 175 ranges. We have set our 1933 quota at 750 ranges.

Water heater sales during 1932 have been rather difficult, a great many people attempting to get along without all the conveniences previously demanded. We expect to push water heater sales aggressively during 1933, however.

During 1932, 690 domestic refrigerators were sold, in addition to which 254 repossessed units were resold, a total of 944 sales. We estimate that dealers sold 700 units. Our quota for 1933 is 700 units.

In all of our advertising we are emphasizing the "all electric" idea, a plan we expect to continue during 1933. We feel confident of accomplishing our goal set up for 1933, but believe that it will take very close supervision of our sales organization, directing the major sales activities along such lines as will secure the greatest possible results from the amount of money expended.

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Central Pacific—

PACIFIC Gas and Electric Co. is the largest independent operating utility in the country. It isn't hard to see why it is the largest, when its executives have the fortitude and the foresight, the ambition and the ability to beat the depression in 1932. P.G. and E. sold 101 per cent of its 1932 load-building quota, Vice-President R. E. Fisher reports.

San Joaquin Light & Power Corp., with its merchandising division, Valley Electrical Supply Co., did just as well. These two systems cover practically all of the central Pacific section, so it is no wonder that that area, comprising central and northern California and Nevada, is the bright spot of the West —and probably of the Union.

In the face of strenuous gas competition, the companies and dealers in this section sold 7 per cent of all the ranges sold in the United States, more than three times as well as the national average. They sold better than one-half as many water heaters as ranges. They sold practically as many domestic refrigeration units as in 1931, and only decreased commercial and construction activity prevented the total from being as large in these fields. On smaller appliances, more within the range of present-day purses, the record is fine.

The three sections so far tabulated, with 6.5 per cent of the national population, have sold 22 per cent of the total ranges, have increased the ratio of water heater sales and generally have done a good load-building job. Only one conclusion can be drawn: The industry in these states knows how to sell and is not afraid to try to sell.

Coast Counties Gas & Electric Co.

By PIERRE VINET
New Business Manager

ALTHOUGH our kilowatt-hour sales in combination service and heating and cooking brackets increased, decreases in other brackets were even greater. Though we added 277 customers, chiefly residential, our total power sales were off 16 per cent because of agricultural and general power shutdowns.

We have encouraged dealer cooperation and the dealers were so strong for cooperative newspaper advertising that they asked us to duplicate ads which we had planned to run but once. Our plans for 1933 are based entirely on working closely with the dealers, pushing sales for them.

▼

Pacific Gas and Electric Co.

By R. E. FISHER
Vice-President in Charge of Public Relations and Sales

OUR quota for 1932 in our cooperative load building plans was oversold; actual accomplishment was 132,730 kw. and 93,874 hp. added, or 101 per cent of quota. Among these additions were 24,000 kw. in dealer cooperative sales, 51,139 kw. in domestic appliances and lighting, 67,881 hp. and 24,334 kw. in commercial and industrial power and lighting, and 25,993 hp. and 5,338 kw. in agricultural power sales.

For 1933, our quota is approximately 83 per cent of 1932 attainments, with increases in dealer cooperative sales, domestic lighting, street and airport lighting, commercial and industrial lighting and industrial heating. The major reductions will come in the commercial and industrial power fields.

Sales of the three major appliances were not so great in our territory in 1932 as in 1931, although a comparatively good job was done in selling 3,211 ranges (1,280 company, 1,931 dealer); 1,699 water heaters (863 company, 836 dealer); and 1,320 major air heaters (315 company, 1,005 dealer). It will be noticed in these figures that dealer sales were as great or greater than central station sales; we believe this is a good sign, indicating that the dealers are pushing appliances and that our cooperative program is effective. Our combined quotas for this year are 4,200 ranges, 2,000 water heaters and 2,000 air heaters.

During 1932 the company cooperated with the Northern California Refrigeration Bureau, confining its efforts to promotional advertising; distributors

ADD A UNIT TO YOUR
Electric kitchen
THIS YEAR MAKE YOUR GIFT a wish come true!
SEE YOUR DEALER OR THE
P·G·and E·
PACIFIC GAS AND ELECTRIC COMPANY
Owned · Operated · Managed by Californians

Advertising plays an important part in P.G. and E.'s commercial program. Annually the appropriation grows larger, and in 1933 will total $400,000

Part of P.G. and E.'s cooperative program included the mailing of monthly broadsides to the dealers, such as the one shown, with an outline of the month's advertising and promotional plans. This enabled dealers to make plans for tying in with the power company advertisements, window displays and billboards

Fairs and exhibits are fertile prospect beds, P.G. and E. has found, so the company never skimps on them. These are the agricultural specialists in charge of that phase of the company's exhibits at the 1932 California State Fair

and dealers sold 16,961 domestic and 1,599 commercial units, with 299 apartment house compressors serving 3,230 kitchens, a total of 18,859 compressors and 22,089 users. The quota for 1933 has been set at 25,000 new users.

Nine isolated plants, representing a total of 2,673 hp., were replaced by central station power. In 1933 we plan to replace 2,800 hp. of isolated plants. Some of the larger jobs signed during the year included the San Francisco War Memorial, with 5,596 hp.; American Dredge Co., 5,600 hp.; Sunnyvale air base, 2,320 hp.; and Judson Mfg. Co., 2,500 hp.

Our budget for sales promotion work in 1933, both gas and electric, is approximately $1,600,000, comparing with an actual expenditure of that sum in 1932. About half of this is to be used for electricity.

Fifty-two salesmen will be employed during the entire year to create new and better lighting outlets, to fill empty sockets, to increase wattage and to increase burning hours in existing outlets. This load-building effort will be confined to existing dwellings and commercial establishments. The plan is intended also to promote and stimulate general interest in modernization of existing inadequate lighting facilities, to the end that dealers will find it profiitable aggressively to prosecute such sales. The quota for these men is 2,175 kw.; it includes the installation of 15,000 kitchen lighting units, 90,000

Outdoor poster boards were changed monthly, according to the item being campaigned, and stickers with a facsimile of the boards were supplied for added effect

Mazda lamps, 3,750 commercial lighting units and various numbers of other lamps and units, a total of 117,750 units.

All of our sales plans encourage dealer cooperation in load building. This company provides about $30,000 to carry on dealer cooperative work, with a sales personnel of seven men engaged directly in the activity. The duties of these men require close relationship with dealers and continuous educational work on such matters as clarification of company appliance sales policy and its service policy, explanation and discussion with the dealers of the company's sales plans, investigation and clearing up of dealer complaints regarding execution of our sales plans, and regular reports of dealer complaints and disposition thereof. It also requires assistance in explaining the company rates for service, distribution of advance copies of company advertising and encouraging tie-in advertisements, educational talks to group dealer meetings and dealers' salesmen, cooperation with appliance dealer associations and submission to dealers of sales prospects and follow-up.

An aggressive, vigorous and well-rounded out sales program is to be prosecuted throughout the year, embodying all of the essential load-building activities.

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Valley Electrical Supply Co.

By H. H. COURTRIGHT
President and Manager

DURING 1932, there were 1,046 ranges added to the lines of San Joaquin Light & Power Corp., of which we are the merchandising division. We have established for 1933 a quota of 1,058 ranges. There were 563 water heaters added and our 1933 quota is 623. The sales for these items were placed through local retailers under our "Through the Dealer" sales plan. We estimate that 3,355 refrigerators were sold in this territory last year and that there will be 4,472 sold during 1933.

Valley Electric Supply Co. has instituted a dealer service to dress dealers' windows, write show cards, distribute literature and prepare advertisements without charge

During 1933, we expect to broaden our sales promotion activities more than ever before and to build our own sales and the power company's domestic load by stimulating the merchandising activities of all retail stores throughout our territory. As one means of doing this, we will carry on an advertising and display service for cooperating dealers.

We believe it is good business practice that the utilities cooperate with the retailers and help them in meeting the new merchandising conditions; that the utilities not only should carry on pioneering, educational and promotional work with its consumers, but should be extremely active in introducing new selling plans and disseminating new merchandising ideas to the dealers. To this end we plan to render a greater promotional and sales helping service to our dealers during 1933 than ever before. We plan to conduct a major appliance campaign each month, featured by dealer cooperation, increased advertising copy, special prizes for salesmen and for employee tips.

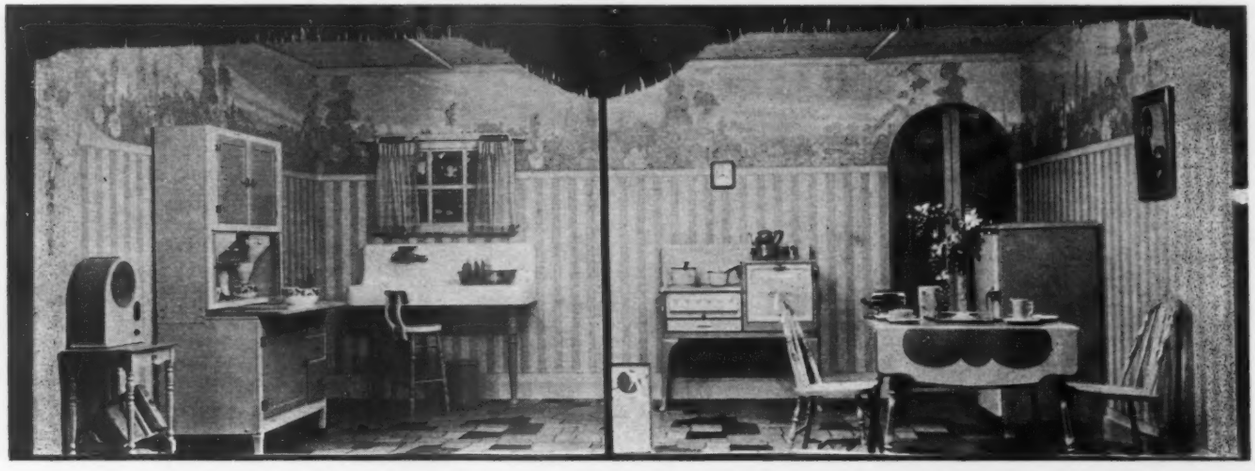
San Joaquin Light and Power Corp.

By E. G. STAHL
Sales Manager

THIS last year was featured by a marked change in the classifications of new business that responded to sales activity. Where formerly agricultural, industrial and oil field power made up the greater percentage of our total new business volume, this year, due to the abundance of gravity irrigation water and industrial curtailment, the volume of these classes was greatly reduced. This deficit was made up through increased sales pressure on the domestic and commercial classifications, with the result that the total volume of new business secured during 1932 was practically equal to that of 1931. New business sales for the year averaged 0.56 kw. per system consumer.

For instance, we added 19,683 kw. of domestic and 3,093 kw. of commercial, industrial and outdoor lighting; 16,412

The all-electric kitchen is being promoted extensively in the West through displays and exhibits, advertising, kitchen coaches and windows such as this at H. C. Capwell Co., department store in Oakland



kw. of domestic and 1,124 kw. of commercial cooking and heating; and 5,366 kw. of industrial, 3,583 kw. of oil field and 7,308 kw. of agricultural power. Our quotas for 1933 are approximately our attainments for 1932, with 10,595 kw. of domestic lighting and 14,295 kw. of domestic cooking budgeted. The total load added was 56,656 kw.; the quota for 1933 is 50,000 kw.

The employee tip plan continues to be an effective sales aid. During 1932, 1,400 employees turned in 8,568 tips, resulting in the sale of 9,188 kw.; 72.5 per cent of all employees participated, 40 per cent actually securing tip sales.

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Southwest—

SOUTHERN California and Arizona constitute what is incorrectly termed the Southwest section; in reality, sections of the Southwest comprise southern California and Arizona. There is a section which is Los Angeles, another which is the remainder of Los Angeles county; San Diego, San Bernardino, Imperial Valley, Phoenix—each is different than the other, while remaining a part of the whole. The Southwest is a combine of individualistic sections.

That is why no common yardstick can be used in measuring utility attainments in the Southwest. Each utility has a different problem to solve; each follows a different practice to attain the solution. The problems of Colorado and Montana are scarcely more different than the problems of the San Bernardino district and Imperial Valley, both of which are in southern California.

An examination of the reports of Los Angeles Gas and Electric Corp., with city-bred problems; of The Southern Sierras Power Co., with its long lines and low customer density; and of Southern California Edison Co., serving much Los Angeles county industrial load, oil fields and the orange belt, is indicative of the nature of this individualism. Each went at the problem at hand in a different fashion, but each ended the year with about 50 per cent attainment of the quotas set for 1932. Because of the similarity in results, it is safe to presume that each did about as well as could be expected.

Southern California, outside of Los Angeles, is chiefly an agricultural area. Great parts of Los Angeles county outside the immediate city are industrial suburbs. The reports show that those companies serving agricultural and power loads, such as Southern California Edison Co., suffered losses, and that those companies serving domestic load primarily, such as Los Angeles Bureau of Power & Light, advanced a little. This was true of every other section in the West.

With 2.8 per cent of the population of the country, this area accounted for 3.7 per cent of the ranges, which means that the section is more stable, electrically, than the average of the nation. But it means more: It means that electricity is going ahead in spite of the increased competition from natural gas in the territory.

Summing up the review of the electrical West in 1932, these outstanding points should be kept in mind: That the eleven Western states still are the most highly electrified and electricity-conscious states in the union; that electrification in the West is growing faster than in the country as a whole; that the West absorbed more than 16,000 ranges, more than one-fourth of all the ranges sold; that the ratio of water heaters to ranges sold is rising in the West, thanks to adjusted rates, even above the 4:10 ratio heretofore attained.

These all are attainments, actual results, which show that the power companies and dealers in this area are doing, proportionally, even a better job than before. But they aren't content with that record; they are going to push harder, to sell better, to grow faster. And that attitude is as real as any figures.

Central Arizona Light & Power Co.

By A. F. MORAIRTY
Assistant General Manager

WITH an estimated loss of 1,042 customers, we worked hard to hold our load figures. We gained 800,000 kw.-hr. in air conditioning sales and now have installations in ten large buildings, with a connected horsepower of 2,988½, and 39 small installations, including restaurants, churches, bakeries and apartment houses, with 689 hp. connected. We will direct our efforts toward obtaining additional air conditioning load in 1933.

In the merchandising field, total power company and dealer sales of ranges were 93, water heaters 48, and refrigerators 649. For 1933, combined quotas are 96 ranges, 55 water heaters and 705 refrigerators.

▼

Los Angeles Bureau of Power and Light

By E. F. SCATTERGOOD
General Manager

CONTINUATION of the depression has served to demonstrate that the retardation in the growth of our system might have been worse, but for the accumulative effect that the intensive load-building efforts of previous years have had in holding up our kilowatt-hour sales and revenues during this period. During the fiscal year ended June 30, 1932, kilowatt-hour sales diminished only 1.8 per cent, as compared with the previous year, and revenues from sales actually showed an increase of 0.3 per cent—the effect of increased use of energy in higher rate blocks by domestic and other customers. The number of customers increased 1,783, less than 0.7 per cent.

The Bureau does not directly merchandise, but during the year 405 ranges and 57 water heaters were added

To hold and increase load, companies have been pushing every type of lighting. Good progress has been made on garden and outdoor lighting because of a renewed interest in home life, brought about by the necessity for staying home more and by a return of home parties

to our lines by dealers and by our specialists in cooperation with and for the dealers. For 1933, we expect 750 ranges and 60 water heaters to be added.

Our electric range campaign (EWEST, Dec. 1, p. 234) will be continued through June 30, the close of our fiscal year. Moreover, the Bureau actively is supporting the newly-formed Los Angeles Junior Cookery Council and its program. (See page 77.)

▼

Los Angeles Gas and Electric Corp.

By FRANK WEISS
Manager, New Business Department

WE THOUGHT we had customer problems in 1929. We were wrong; our customer problems were very few and simple compared with those of 1932. And so, in 1932, we did a different kind of selling:

1. Helping the consumer to save energy.
2. Preaching the gospel of better lighting as an aid to sales.
3. Leniency in credit and collections.
4. Recommending modern equipment as an aid to business recovery.

We feel that our program of proper

Unusual Weather, Yes
. . but all's well in the home with ADEQUATE REFRIGERATION . . .
Consult Your Local Dealer
OR
SOUTHERN CALIFORNIA Edison EDISON COMPANY LTD.
GOD, ISN'T IT . . . A RANGE THAT COOLS YOUR KITCHEN

electric service utilization directed toward existing customers has borne good fruit; we more than held our own during the year. We added 1,328 light and 463 power customers, and even with a decrease in power load, the total load connected increased 888 kw. Ninety-six ranges were added to the system.

We shall continue the same policies in 1933, with a better understanding of what to do and how to do it.

▼

Southern California Edison Co. Ltd.

By W. L. FROST
Vice-President in Charge of Sales

COMMERCIAL activities and attainments of the Southern California Edison Co. for the year 1932 have been satisfactory, when full consideration is given to the general business picture. Many of the important indices of commercial developments show improvements in 1932 as against 1931. A few minor decreases are found in the case of several of the less-important measuring sticks.

Total number of consumers at the end of 1932 was 484,450 as against 476,503 in 1931, an increase of 7,847. Total lighting horsepower at the end of 1932 was 573,526 as against 556,562 in 1931, an increase of 16,964 hp. While this increase is not startling, it is indicative of the kind of load upon which the commercial activity of our company is centered in times such as these.

Industrial power load shows a slight decrease which is to be expected under present-day conditions. There were 465,792 hp. of industrial load on the lines at the end of 1932, as against a total of 479,766 hp. in 1931. This is a decrease of 13,974 hp.

Agricultural power load also shows a slight decrease. At the end of 1932 there were 318,338 hp. of agricultural load on the lines, while the figure for 1931 shows 325,678, a decrease of 7,340 hp.

Oil field operations in the territory served by the Edison company were below normal and this is reflected in a decrease in oil field load on Edison lines. At the end of 1932 there were 159,583 hp. in this classification as against 175,491 hp. at the end of 1931, a decrease of 15,908 hp.

The total light and power load for the entire system as of the end of 1932 was 2,507,538 hp. as against a figure of 2,515,098 hp. in 1931, a decrease of 7,560 hp.

Quotas for 1933 are being established on what are expected to be attainable bases. A special effort, of course, will be concentrated upon the development of the domestic load, including in that category air conditioning and domestic cooking. Our campaign program for the year is being established on a very flexible basis. We are going to attempt to take advantage of even slight upturns in general conditions to further the urge to use electrical appliances in the homes and elsewhere.

We have placed on our lines approximately 1,000 electric ranges during 1932 and anticipate raising this figure to about 1,200 for 1933. During the past five years the dealers in the Edison territory have consistently sold approximately 25 per cent of the total of all ranges sold in the area. We therefore are assuming that the dealer sales for 1933 will be in the neighborhood of 300 ranges.

Because of certain conditions with reference to our rate for water heating, we have not been in a position actively to push this type of load. Efforts now are being made to adjust these rate questions, and our sales activity in this line will be contingent upon the results of these efforts.

While it is impossible to give an exact figure on the total number of electric refrigerators installed in the Southern California territory during the past year, we estimate that approximately 4,000 refrigerator sales were made. Of this total, the Edison

Left — Southern California Edison Co. Ltd. reports that dealers sold nine times as many refrigerators as the company. Such advertising as this helped sell the 4,000 units and directed the prospects to the dealers. It should be noted, too, that electric ranges are being "plugged" in the refrigeration advertisement. Such persistent hammering, never letting the public forget the electric range story, helped sales

You Changed TO AN ELECTRIC
NOW . . for the same good reason change to an
ELECTRIC fast COOKING RANGE
A million American women have already changed! It won't be long before YOU will join them . . . .
MORE LEISURE + Safety!
FOR THE HOME MAKER
YOUR CITY-OWNED
BUREAU of POWER and LIGHT
City of Los Angeles
How and Where to Buy . . . . .

Right—Los Angeles' Bureau of Power & Light, which merchandises nothing but its services, backed its cooperative range campaign with much well-directed advertising and a program of specialized prospecting. Good appliance advertising raised the Bureau's average domestic consumption 32 kw.-hr. during the year

Employee "tip" campaigns are becoming more popular and universal each year

Decreased construction has not decreased activity in Red Seal wiring promotion; consequently, a greater proportion of 1932 construction was adequately wired. The Southern Sierras Power Co. and the City of Riverside wiring department had exhibits of certified wiring at an architects' convention in the southern California city

company sold 417, or approximately 10 per cent.

Programmed efforts to make possible dealer participation in the sales promotion work of the company are being carefully developed. Experiments are being carried on at the present time with a campaign which is aimed to get out of the hands of our consumers old, antiquated table appliances: Through the use of newspaper advertising, consumers are invited to bring in any old lamp socket heating appliance and to trade it in as a part payment on any new lamp socket heating appliance. The old appliance must be at least ten years old and the allowance made on any new appliance is 15 per cent of the cost of the new appliance. In the one district in which this campaign is now being carried on as an experiment, the dealers have coordinated 100 per cent and are participating with us in this effort. If this campaign should prove to be successful in the development of sales, it is planned to carry it on in other parts of the system.

San Diego Consolidated Gas & Electric Co.

By A. E. HOLLOWAY
Vice-President in Charge of Sales

WHILE our company did not accomplish as much in 1932, proportionately, as in preceding years, increases in load in most departments were satisfactory. During this period, a total of 1,176 new customers was added, with a total of 6,537 kw. of load. This increase was divided: 1,093 domestic and 87 commercial. Four power customers were lost.

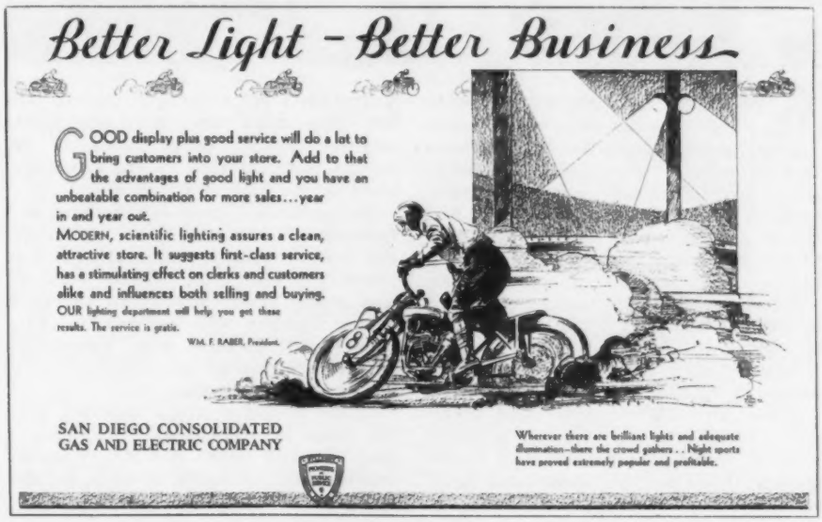
Our merchandise department sold 9,100 electrical appliances, electric irons heading the list with 996. Numerically, sales were 25 per cent lower than in 1931.

Appliance campaigns were carried on during the year on refrigerators, washing machines, ranges and ironers, with fairly good success, although volume and prices were considerably lower than in 1931. Dealers sold 25 of the 125 ranges added to our lines, half of the 40 water heaters and all but 100 of the 2,150 refrigerators added. During 1933, combined quotas are 120 ranges, 60 water heaters and 3,000 refrigerators.

Red Seal activities were carried on as usual and 21 applications were received, which, while fewer than in 1931, is very good in proportion to the decrease in building permits.

We are planning a number of cooperative refrigerator campaigns to be carried out in cooperation with the dealers through the very active Electric Refrigeration Bureau in the district. It is expected that this summer we also will put on one or two cooperative range campaigns.

Lighting load is profitable load, so San Diego Consolidated Gas & Electric Co. campaigned long and well, with large space in many newspapers, to sell commercial and domestic customers on the profit and safety of better lighting


Better Light - Better Business
GOOD display plus good service will do a lot to bring customers into your store. Add to that the advantages of good light and you have an unbeatable combination for more sales...year in and year out.
MODERN, scientific lighting assures a clean, attractive store. It suggests first-class service, has a stimulating effect on clerks and customers alike and influences both selling and buying. OUR lighting department will help you get these results. The service is gratis.
WM. F. RABER, President.
SAN DIEGO CONSOLIDATED GAS AND ELECTRIC COMPANY
Wherever there are brilliant lights and adequate illumination—there the crowd gathers... Night sports have proved extremely popular and profitable.

The Southern Sierras Power Co.

By GEO. T. BIGELOW
Manager, Commercial Department

AS IN the case of practically every other company under present conditions, with no market for the product of industry, our various power loads are below last year. In the domestic field, however, we show a gratifying increase, undoubtedly due to our load-building efforts through merchandising in the field.

We estimate that we have added 300 ranges, 150 water heaters and 210 refrigerators to our system during the year, the figures not including dealer sales.

As in the past, we have stuck to our policy of continued hard drives on these three major items without any spectacular activities of any kind, feeling that, in a territory such as ours, constant personal effort rather than general promotional activities is the best means of increasing load. We will continue this policy in 1933.

P.C.E.A. Retained as N.E.L.A. Dissolves; Dues Reduced, Convention and Conclaves Called Off

RETENTION of the Pacific Coast Electrical Association as an autonomous industry organization, with territory, membership and purposes similar to those under which it operated as a geographic division of the N.E.L.A., was decided upon at a meeting of the executive committee Jan. 20. Committee chairmen and membership of the association have been advised of the changes in a letter sent out by President R. E. Fisher. This action followed the announcement of the formation of the Edison Electric Institute to supplant the present N.E.L.A. and the Association of Edison Illuminating Companies, in which no provision is made for territorial subdivisions of the new organization.

As an economy move, it was decided for the present to declare a moratorium on section conclaves and committee meetings and to hold no convention in 1933. Necessary and desirable committee work which will not involve any expenditure of funds will be carried on by correspondence, although the right to call special meetings of committees as future conditions may dictate was reserved for the president and the executive committee. Membership classifications remain unchanged, but dues for all members have been reduced to $1 per year. As in the past, membership in the organization will carry with it a subscription to ELECTRICAL WEST. A special committee was appointed to redraft the constitution of the organization to conform with the changes necessitated by the dissolution of the N.E.L.A.

"Out of the changing conditions dictated by the present-day economic situation, it is hoped that there may spring up here on the Pacific Coast a strong autonomous industry organization," President Fisher stated in commenting upon the new program. "Such an organization is both desirable and necessary. Fundamental differences in industry problems and geographic isolation are factors that augur well for the success of such an organization."

$54,000 Budget Approved

Involving a budget of $54,000, a program for 1933 was adopted and approved for the P.C.E.A. by the board of directors at the San Francisco meeting. Industry coordination and cooperation for market development is the theme around which the program is built.

Red Seal, appliance merchandising, industrial electrification, rural electrification and increased activity in all phases of lighting development are activities included in the plans for this year. As in the past, a campaign of cooperative advertising designed to stimulate increased use of electrical appliances and devices and electricity itself will be carried in approximately fourteen statewide magazines.

The bureau setup of committees operating in the southern, central and northern regions of the state on each one of the cooperative activities was not altered. The present plans also contemplate maintenance of field work with field men operating in each of the three regions. The work of the California Committee on the Relation of Electricity to Agriculture will also be continued.

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Edison Electric Institute Supersedes N.E.L.A.

With the formation of Edison Electric Institute to take the place of the National Electric Light Assn., a somewhat different objective is given the trade association of the electric light and power industry. While the officers of the new Institute are those of the old N.E.L.A. (George B. Cortelyou, president; William J. Hagenah, vice-president; Bernard F. Weadock, executive secretary; and Edward Reynolds, Jr., treasurer), the scope and concept of the Institute will be different and wider.

Only utilities will be represented in the new organization, with company, individual and honorary memberships; it will be essentially self-regulating, with disciplinary measures for member companies which do not conform to the rules laid down.

Embodied in the constitution are provisions whereby member companies must make definite commitment to follow certain business principles; power of discipline, expulsion or suspension is given the officers through the membership committee; definite requirements are made as to the publication of audited statements; power to investigate practices of member companies is given Institute officers.

Harry J. Bauer, chairman of the board, Southern California Edison Co. Ltd., and A. F. Hockenbeamer, president, Pacific Gas and Electric Co., are two of the 24 trustees who will govern the Institute.

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She Knows How to Sell Appliances

WHEN the women's committee at Public Service Co. of Colorado decided to tie in with the Rocky Mountain Division's "Give Something Electrical for Christmas" campaign, they taught some male salesmen a few things about the art. The 112 members of the committee were instrumental in selling 2,031 appliances, representing purchases of 1,295 customers. Included in the list was everything from lamps to ranges.

Miss Evelyn Garvin, securities department employee, is shown receiving a mixer from Clare N. Stannard, president of the company, for her achievement in winning first prize with 31,015 points, involving 193 individual sales and 413 appliances. The activity was set up on a point basis, with cord sets and other small items rated at 5 points and an electric range rated at 500 points. Miss Garvin's record was equivalent to the sale of 62 ranges.

No particular store or merchant was favored, the contestants merely inspiring friends and acquaintances to buy something electrical. When the sale was made, credit was given the committee member who inspired it. As a result, 122 dealers were patronized, only 30 per cent of the sales coming to the company's stores.

James H. Blynn and Fitzgerald Mfg. Co. donated the Magic Maid mixer given as first prize, and Mr. Stannard donated two additional awards, besides feting the women at a luncheon.

Bigger Taxes, Lower Rates For Utilities Asked

California utilities are the object of three bills now before the legislators of that state. One would increase utility taxes $5,802,507 a year, equalizing utility and common property assessments in line with the report of the tax research bureau (EWEST, Jan. 1, p. 29). A second would force the utilities to pay the $500,000 annual cost of maintaining the railroad commission, and the third is designed to go as far as is legally possible to require the railroad commission to reduce service rates to the consumer. These bills have been introduced into both houses.

Revenue to pay the expenses of the commission would be raised by levying an assessment of not to exceed one-half of one per cent against the gross receipts of the utilities. Basis for the rate reduction bill is the belief that "public utility rates must not exceed the value of the service to the consumers." It requires the commission to take cognizance of evidence of the value of service.

Still another action of the legislators was a resolution, passed by the senate, asking the railroad commission to supply the legislators with a list of all salaries of $5,000 or more paid public utility officials, together with the expenses charged up by these officials, and to list all contributions or donations by the utilities to organizations.

Sponsors of the resolution believe that, if high salaries are being paid, it would indicate that the utilities would be able to absorb additional taxes which might be levied.

Portland Utility Tax Killed

A proposal by a Portland city commissioner to tax the gross revenues of Portland General Electric Co. and Portland Gas & Coke Co. 3 per cent as a means of relieving some of the property tax was killed. Northwestern Electric Co. pays such a tax under its franchise. Some citizens opposed the tax on the ground that lower, not higher, rates are desired, and public utility officials pointed out that declining revenues make it necessary that any such tax be passed on to the consumer.

Kw.-Hr. Tax Up in Utah

Utah will levy a tax of one-half mill per kilowatt-hour of electricity generated in the state if a bill introduced in the state senate is passed. The revenue derived is to be used in lowering the tangible property tax.

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Utility Regulatory Bill Reaches Oregon Senate

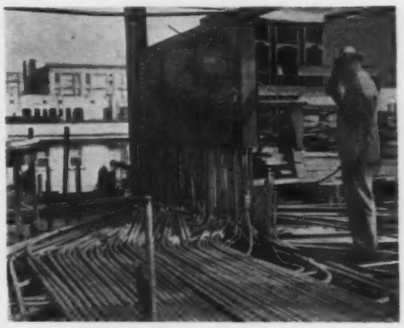
Enlarging the power of the Oregon public utilities commission and providing for further control of public utilities in the state, a bill, drafted by Charles M. Thomas, utilities commissioner, in line with his recent public utterances made in connection with hearings during the past year (EWEST, Jan. 1, p. 29), was introduced in the Oregon state senate on Jan. 16.

Most radical departure from the present law provides for the recapture of excess earnings above a reasonable return, the excess to be disbursed by the utility for the benefit of its customers under the supervision of the commissioner. Further, the law would place the budgets of utilities under supervisory control of the commissioner, who would have the power to veto any proposed expenditure or proportion of a budgeted item. Utilities would be assessed the cost of investigation, as in Wisconsin, and the commissioner would have power to supervise security issues, sales, mergers and similar transactions, as in California.

Other contemplated changes would prohibit payment for services by a utility to any corporation having an affiliated interest until such payment had been approved, would grant the commissioner power to hold a utility in contempt if it failed to observe an order and would compel utilities hereafter formed for operation in Oregon to incorporate under Oregon law.

The bill has able senate sponsorship and is further bolstered by a message from the governor to the legislature the same day the bill was introduced.

A Pipe Job



This view of the rear of the relay cabinets in Los Angeles Bureau of Power & Light's Hollywood substation No. 10, should make a conduit manufacturer's heart jump. The substation, under construction, is to serve West Hollywood

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G. E. Wins First Suit Against Lamp Importers

General Electric Co. won a victory in the first of what may be a series of suits against importers and distributors of Japanese and domestic lamps which infringe on General Electric patents, when a San Francisco court in December enjoined two San Francisco importers and several Los Angeles distributors and retailers from handling lamps of certain Japanese manufacturers. Because the defendants agreed to be enjoined by the court, collection of any damages was waived by the plaintiff.

Basis for the injunction was the infringement of General Electric inside frost, tipless and gas-filled patents, and a marked similarity between the "TE" of a Japanese manufacturer and the GE monogram.

Other suits have been filed against importers of Japanese lamps, and the General Electric's attitude appears to be militantly to protect its patents.

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Nielsen Resigns N.E.L.A. Division Presidency

W. W. NIELSEN, president of the Rocky Mountain Division of National Electric Light Assn., tendered his resignation early in December and the executive committee of the division later named Fred Norcross, president-elect, to serve the unexpired term. The new incumbent had not expected to enter into his official duties until July 1, beginning of the association's fiscal year. Action of the executive committee, therefore, introduces him to leadership more than six months ahead of schedule.

Mr. Nielsen formerly was manager of New Mexico Power Co., Albuquerque, resigning the position earlier in December.

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Wapato Project Bids Are Announced

Fairbanks, Morse & Co., at $12,505, was low bidder on two motors to operate pumps on unit No. 2 of the Wapato, Wash., project of the Reclamation Bureau, it was discovered when bids were opened. Byron Jackson Co., at $4,916, was low on two pumps; Pennsylvania Transformer Co., $5,260, was low on four transformers; General Electric Co., $4,272, was low on substation structure; and Automatic Cone Valve Co., $3,750, was low on automatic valves. When the unit is completed in April, 7,200 acres will be added to the district's irrigable area.

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Idaho Cities Will Appeal Adverse Power Ruling

Following the recent decision of the Idaho Supreme Court denying Coeur d'Alene the right to construct or acquire a light and power system to be paid for out of revenue, word has been received that other Idaho cities will join with Coeur d'Alene in its petition for a rehearing.

The matter went into litigation some time ago, after the voters of the city approved a municipal ownership proposal which specified that the proposed system be financed from revenues. The Supreme Court ruled that state statutes operate to prevent cities pledging revenues for such enterprises, thus reversing a district court's denial of a petition for a restraining order against the city.

Few Bond Maturities In Western States

Of the national total of $161,419,300 of electric light and power bond maturities in 1933, only four issues of any consequence involve utility companies in the eleven Western states, now that Portland General Electric Co. has provided for the $7,500,000 in 4 per cent notes which matured Jan. 1. Pacific Gas and Electric Co. has maturing a $2,203,000 issue of California Gas & Electric general collateral 5s maturing in March and a $5,018,000 issue of San Francisco Gas & Electric general 4½s in November. In June there is due $1,987,000 in Puget Sound Power & Light first 5s and in August $3,076,000 in Montana Power Transmission first 5s. City of Tacoma Department of Lighting has several small maturities during the year. In December there fall due $1,349,000 6½ per cent notes of the Arizona Edison Co., which is now in the hands of a federal receiver.

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Los Angeles Utility Has Fiftieth Anniversary

On Dec. 30, 1932, Los Angeles Gas and Electric Corp. observed the fiftieth anniversary of the beginning of electric service in Los Angeles by Los Angeles Electric Corp., pioneer predecessor of the present company.

Original service was confined to street lighting by d.c. arc lamps on seven masts, each 150 ft. high, and only 41 customers were served in the first year by the 30-kw. generating plant. The first a.c. generator was installed in 1890.

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Critics Cite Abundance of R.F.C. Loans to California

In connection with the application of the Los Angeles Bureau of Power & Light for a loan of $22,800,000 from the Reconstruction Finance Corporation for the construction of the transmission system which will carry power from Hoover Dam, the question has been raised as to the propriety of making so may loans in a single state. California already has obtained loans for the Los Angeles aqueduct and for the San Francisco bridges.

To meet that objection the representatives of the Bureau of Power & Light are pointing out that, in addition to the $22,800,000 which the R. F. C. may furnish, the Bureau will expend $11,400,000 on construction within the city limits of Los Angeles. The Bureau estimates that contracts with manufacturers located outside of California will amount to $14,000,000. It is planned to let $8,000,000 in contracts with manufacturers outside of California during the first four months of 1933; practically all of the remainder of the contracts would be let before the end of the calendar year. These contracts are principally as follows: line conductors, $3,000,000; steel towers and copper weld ground cables, $3,100,000; insulators, $700,000; oil circuit breakers, transformers and appurtenances, $3,800,000; synchronous condensers, $650,000; underground cables, $900,000. In addition, there would be smaller expenditures for poles, feder regulators, distribution transformers, fiber duct and copper wire.

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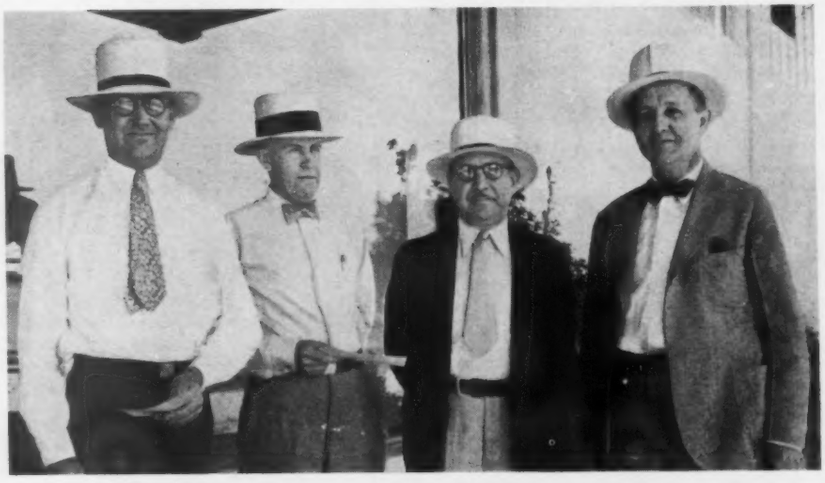
For Jobs Signed, Red-Sealed and Delivered



Among the big winners in Pacific Coast Electrical Bureau's Red Seal contest were (left to right): S. S. Olsen, electrical contractor of Madera; C. H. Edman, salesman, San Joaquin Light & Power Corp., Madera; J. E. Barrett, district manager, San Joaquin Light & Power Corp., Madera; and H. W. Stitt, regional manager, P.C.E.B. Mr. Olsen won the contractor's prize for the first quarter; Mr. Edman won first prize for power company men in the first quarter, second in the last quarter and the grand annual prize; Mr. Barrett's office won the plaque and Mr. Barrett the grandfather clock-radio; Mr. Stitt won praise for his work and thanks for the checks

San Joaquin Madera Office Wins Red Seal Plaque

Culmination of the Pacific Coast Electrical Bureau's 1932 Red Seal contest brought prizes to many consistent quarterly prize winners and the silver plaque to the Madera office of the San Joaquin Light & Power Corp. C. H. Edman, of that office, was the winner of the power company salesman $100 prize for the entire contest, even as he was winner of the first quarter $75 prize and $50 second prize of the third quarter. J. E. Barrett, district manager of the Madera office, received the grandfather clock-radio for the district, making the best showing in Red Seal homes during the past year. C. L. Bice, contractor of Vista, Calif., was the winner of the year's $100 first prize as well as the winner of the second and third quarter $25 prizes from the San Diego Consolidated Gas & Electric Co. territory.

Complete announcement of the year's Red Seal contest results was given by Victor Hartley, assistant managing director, as follows:

For the first quarter, the power company salesmen's prizes went to C. H. Edman, San Joaquin Light & Power Corp., Madera, 535.0 per cent of quota, $75; D. C. Miller, Midland Counties Public Service Corp., San Luis Obispo, 101.5 per cent of quota, $50; W. J. Simpson, Jr., Pacific Gas and Electric Co., San Rafael, 91 per cent of quota, $25. Contractor awards went to H. R. Eklund, San Rafael; S. S. Olsen, Madera; Kuster and Wetzel, Long Beach; and Central Electric Co., Watsonville, each of which received a $25 prize. In the Southern Sierras territory, the prize was split four ways between Ted Frazer, Corona; F. B. Pickering, Riverside; Walter V. Pittman, Riverside; and S. and S. Electric Co., San Bernardino, who tied. A similar four-way tie in San Diego territory split the prize between Bay Electric Co., San Diego; E. H. Dietrich, Escondido; Gaus Electric Co., Carlsbad; and W. D. Hall Co., El Cajon.

The second quarter's contest resulted in the San Diego Consolidated Gas & Electric Co. winning the silver plaque from the Madera office of San Joaquin Light & Power Corp. A. I. Benedict, of the San Diego company, won the $75 first prize; L. L. Turnbull, of the Merced district, San Joaquin company, won the $50 second prize and A. J. Thomley, of the Montebello district, Southern California Edison Co. Ltd., won the $25 third prize for power company salesmen.

Contractor winners of the second quarter were Empire Electric Co., Santa Rosa; R. W. Wilson, Santa Maria; Kuster and Wetzel, Long Beach; C. L. Bice, Vista; Paige Electric Co., San Bernardino, each of whom received $25.

For the third and final quarter the power company prizes went to A. J. Thornley, $75; C. H. Edman, $50; and D. C. Miller, $25. The plaque went again to the Madera office. Contractor winners were Walter Christenson, Santa Rosa; Heinck Electric Co., San-

ger; C. L. Bice, Vista; and George N. Black, San Bernardino.

Not a little of the interest aroused in the plan and contest last year was due to the clever illustrated bulletins issued and distributed to contractors and power company salesmen. Fred Rae, of General Electric Supply Corp., San Francisco, was editor of these snappy bulletins.

Meetings

Utah Electrical League Re-elects Officers

At a recent meeting of the Electrical League of Utah, held in Salt Lake City, L. E. Brown, local manager of the Westinghouse Electric & Mfg. Co., was re-elected president; R. P. Maybee, of Maybee & Shipley Electric Co., was re-elected vice-president; F. S. Cundiff, commercial manager, Mountain States Telephone & Telegraph Co., was re-elected secretary-treasurer; and R. E. Folland was re-elected executive secretary.

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Santa Clara League Names Fred Doerr President

Fred Doerr, proprietor of Garden City Electric Co., San Jose, Calif., has been elected president of the Santa Clara County Electrical Development League. He succeeds Roy M. Butcher, electrical contractor of San Jose, as president. "Larry" Greer was elected secretary-treasurer to succeed "Bill" Bowler; both are of the Pacific Gas and Electric Co. sales staff.

Reporting at the annual meeting at which the election took place, the league was shown to have maintained an average attendance of 28 at its twice-monthly meetings, eighteen in all held during the past year. It spent $1,800 in advertising, staged an electrical appliance show at a nominal cost of $50 for each dealer and held a very successful barbecue picnic during the year. In retiring, Mr. Butcher recommended a committee on ordinance preparation, another on promoting the certified contractor plan, a third to tie in with the National Electric Cookery Council and a fourth a clearing house or grievance committee for handling industry complaints. He also recommended that the electrical show, so successful last year, be repeated this spring.

Orville Johnson, Graybar, was at first elected to the presidency, but was unable to accept it. Mr. Johnson has been very active in the league and probably will remain on the board of directors. Harry Snedeker, city electrician, San Jose, was appointed sergeant-at-arms. Ralph Wiley, chief of the department of electricity, San Francisco, spoke at the meeting of Jan. 12 on the San Francisco appliance ordinance.

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Air Conditioning Meet Opens Feb. 9

Scientific aspects of air conditioning will feature the Feb. 9 session of the Western Conference on Air Conditioning, to be held at the University of California, whereas the second day's session, on the 10th, will be held in the civic auditorium, San Francisco, and will deal with the more popular and practical phases of the subject.

Treating the scientific aspects, the first paper will be "The Basic Theory," by Professor Washington, Stanford University. Another paper, "Physiological-Psychological Aspects," will be treated by Dr. C. W. Brown. Another paper is being prepared on the subject of heat transference and temperature lag in building design and still another discussing psychrometric charts. The afternoon session will largely be devoted to the cooling problem.

The civic auditorium session will devote itself to the problems of unit air conditioners as applied to homes and offices. The afternoon session will treat with large commercial and industrial applications. Local installations, particularly, will be discussed. A dinner meeting at the Engineers' Club in San Francisco will close the first day's session. Dr. Baldwin M. Woods, University of California, is general chairman. The conference is being sponsored by the San Francisco Section, A.S.M.E., and engineering department of University of California. Cooperating with these are the A.I.E.E., A.S.M. & M.E., A.I.A., N.A.P.R.E., A.S.H. & V.E., and S.R.E.

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Oregon C.R.E.A. Tries Radio School

An innovation in the dissemination of farm electrification information is being tried out at Oregon State College, Corvallis, through a series of radio lessons. This course, which is intended primarily for high schools having vocational agricultural departments, is being broadcast at the rate of two lessons per week from the college radio station, KOAC. The course is being prepared by Prof. Clyde Walker, of the agricultural engineering department, and C. J. Hurd, assistant agricultural engineer. The lessons, which consume a half-hour period, are each given twice, one in the morning and one on an afternoon, so as to accommodate the desires of the various classes. The course commenced Jan. 4, with fourteen high school classes enrolled and with the expressed interest of a number of farmers throughout the state who were planning to listen in, and will continue through March.

Much of the material scheduled for presentation is material originating from experiments of the Oregon Committee on Relation of Electricity to Agriculture. After going through the fundamentals of electricity and central station service and rates, the lessons proceed to take up different uses of electricity on the farm, giving specific instructions as to how to make installations and how to solve the electrical and mechanical problems involved. Some of the subjects are: feed grinding, wiring for poultry houses, electric brooding, water heating, sterilization and refrigeration for dairies, and electrically-heated hot beds.

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Lighting May Mean a Dog's Life—or Death

Dr. Walkerdeni's Dog & Cat Hospital, in Riverside, Calif., has as fine a lighting installation in its operating room as do many smaller hospitals for humans. Engineered by Stewart Cundiff, The Southern Sierras Power Co., and installed by Walter Pittman, electrical contractor of Riverside, the installation comprises four 150-watt ceiling Holophane units over the operating table, standard for small surgeries, plus regular lighting. The hospital also has electric heating and sterilizing

Supplementing the radio talks, the department has issued, in mimeographed form distributed to all those interested, instructions for teachers, outline of each lesson for students and the lesson itself as it is broadcast. In these releases are additional problems to be worked out for practice and suggestions for related work and study.

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New Apple Washer Developed in Washington

Development of a new style apple washing machine at Washington State College was announced as a discovery of primary importance at the annual meeting of the Washington Committee on the Relation of Electricity to Agriculture held in Spokane on Jan. 9. The new machine, tested at Wenatchee during the past season, enables operators to remove both arsenical and lead spray residues and turn out absolutely clean fruit. Electrically operated, it puts the apples through a series of dips and brushes. Electricity is also used to heat the solutions and to operate centrifugal pumps.

All-night lighting of poultry houses was found to stimulate egg production during fall and winter months, when prices are highest, at a lower cost than 12-hour lighting, but with a slightly higher mortality than the 12-hour system, according to the report of Paul K. Jones, of the state college staff.

Other experiments were described on electric brooder equipment; warming water for dairies and poultry; sprinkler evaporation; electric hotbeads and soil heating; and home economics.

The program outlined for the work of the committee investigators during the year 1933 includes additional studies and demonstrations of pasture irrigation, studies of alfalfa feeding of poultry; building of a feed mixer; building of a poultry semi-scalder for small ranch use; studies of electric cooking of potatoes and other feed for hogs; study of the possible relation of X-rays and ultra-violet light on the development of sport buds of apples; study and development of a machine for washing beets, potatoes and other root crops before storage or shipment.

Northwest Association

Northwest Power Assn. To Hold Spring Conclaves

Plans for holding spring meetings of the Accounting, Engineering and Sales Sections of the Northwest Electric Light & Power Assn. are progressing. The first of these conclaves will be the Sales Section, in Spokane, March 16-18; the accountants have scheduled their meeting for Portland, May 15-16; the dates of the engineering meetings are yet to be announced.

Organization of the Sales Section has been completed and committee appointments are as follows:

Under the industrial and commercial sales bureau, headed by H. S. Atwood, Puget Sound Power & Light Co., four committees will function, their chairmen being: commercial cooking, P. E. Stowell, Dohrmann Hotel Supply Co.; commercial and industrial air conditioning, H. C. Bender, The Washington Water Power Co.; commercial and industrial lighting (including outdoor lighting), Hobart McDaniel, Pacific Power & Light Co.; industrial power, H. B. Batchellor, Puget Sound Power & Light Co., who also acts as bureau vice-chairman.

R. M. Bleak, Utah Power & Light Co., chairman of the residential sales bureau, has appointed five committees: water heating, J. B. McLain, Idaho Power Co.; electric range, Orr Crites, Portland General Electric Co.; home appliance, Guy Davis, Pacific Power & Light Co.; home air conditioning and heating (including refrigeration), Glenn L. Jackson, The California Oregon Power Co.; home lighting, Walter Potter, Incandescent Lamp Department, General Electric Co. Mr. Davis is bureau vice-chairman.

The rural sales bureau will not organize into separate committees, but will carry on the farm equipment and farm service phases of its work through the bureau as a whole. Headed by D. B. Leonard, Pacific Power & Light Co., with L. C. Moore, Portland General Electric Co., as vice-chairman, the bureau consists of nine other members from utility companies and state C.R.E.A. committees.

K. M. Robinson, Idaho Power Co., heads the customer service committee functioning outside of the three bureaus.

Recently off the press in pamphlet form is a report of the prime movers committee of the Engineering Section, edited by A. H. Greisser, last year's chairman, with cost data and operating information on several diesel-electric generating stations in the Northwest. Considerable demand for this report made an extra printing necessary; a few remain and may be had for 15 c. each from the office of the association secretary, Berkeley Snow, 707 Spalding Bldg., Portland.

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Industrial Map of San Francisco Bay Area

Pictograph map of the San Francisco Bay industrial area shown in relation to principal cities of northern California, which was prepared by Pacific Gas and Electric Co. and presented by A. F. Hockenbeamer, president, to the San Francisco Bay Industrial Committee. This committee, composed of representatives of all chambers of commerce in the San Francisco Bay region, is charged with the primary job of selling the area to prospective industries

Personals

Asphyxiation Takes Life of Cy Geisbush

CY GEISBUSH, vital, enthusiastic Eastern Sales Manager of ELECTRICAL WEST, successfully survived a shock of 22,000 volts in 1921. By a paradoxical turn of fate, his life was snuffed out by fumes from a gas jet on which a pot of coffee had boiled over, at his home at Jamaica, Long Island, New Year's eve, while busy writing letters to his friends and associates in California. By this subtle, unexpected triviality and ironic paradox was closed a career of brilliant contrasts and of undoubted promise.

Cy Geisbush, born in Milwaukee, Wis., of a German-American father (who was captain of a Spanish-American War volunteer company) and an Irish-American mother, educated in the public schools of that city, began his electrical experiences as an electrician's apprentice at the Hawthorne works of Western Electric Co. During the war he served in the navy as electrician, attending the electrical school at Hampton Roads. Upon discharge he worked his way West by various jobs as electrician on construction projects.

In 1920, partly by riding the brake rods, partly hiking across the scorching summer Arizona desert, partly hitchhiking, he arrived in Los Angeles, without a dime. Unable to find electrical work he took a job cleaning up after a school fire in a small San Joaquin Valley town, leaving his navy discharge as security for a loan for food until his first pay day. Returning to Los Angeles, he worked in an electrical crew at the Huntington Park substation of Southern California Edison Co. Ltd., where, while reaching for a tool, he backed into a live bus and received 22,000 volts through his body. Resuscitated, he was given the position of business agent for Local 83 of the union during his convalescence. Here he demonstrated such leadership potentiality that the contractors of San Pedro and Wilmington, then of Los Angeles, and finally of southern California, successively made him their association manager and executive secretary.

In 1924 he was instrumental in the reorganization of the two state groups of contractors into the California Electragists, and reaffiliation with the national association. In 1927 he was made state manager of the Electragists. During his management of this contractor-dealer association he initiated its successful Estimators' Section, its Motor Section, and conducted educational meetings throughout the state on business methods and estimating for contractors.

His entire career in association activities had been so constructive and his personality so much felt by all branches of the industry in the West that the late C. T. Hutchinson, then president of the McGraw-Hill Co. of California, in 1929 persuaded Cy Geisbush to leave the Electragists and to represent ELECTRICAL WEST in New York. Although without previous advertising experience whatever, with characteristic penetration to fundamentals, keen curiosity and voracious appetite for knowledge, he was eminently successful in this new work. Within the past year he had been advanced to added responsibility in the McGraw-Hill Publishing Co.

Only 37 years old, leaving his wife and a family of three small boys, having left a veritable wake of friends following him wherever he went, Cy Geisbush was cut off from a promising career and the industry deprived of a potential leader possessed of compelling human sympathy and amazing mental capacity by the accident which took his life. ELECTRICAL WEST has lost an enthusiastic representative who made Eastern manufacturers keenly aware of the accomplishments and the future of the electrical industry in the West.

CY GEISBUSH

M. L. HIBBARD

E. B. CRIDDLE

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Hibbard Now President of Idaho Power Co.

M. L. HIBBARD, vice-president and general manager, Idaho Power Company, Boise, since May, 1929, was on Jan. 12 elected president of the company by the board of directors; he will become president and general manager.

F. F. Johnson, who has been president since the incorporation of the company in 1916, and more recently chairman of the board in addition, will continue to occupy the latter position.

Mr. Hibbard has had a varied career in the electrical industry, which commenced immediately upon his graduation from McGill University in 1906. This career included research work in the General Electric laboratories, freelance consulting engineering, constructing the street railway system in San Antonio, Texas, and holding various operating and managerial positions in Quebec, North Dakota and Minnesota. From 1923 to 1928 he was with the Northern States Power Co., Minneapolis, as assistant vice-president and chief operating engineer. In 1928 he came to the Idaho Power Co. as assistant general manager, advancing to general manager and the vice-presidency of that company on the resignation of W. R. Putnam, now of Electric Bond & Share Co. Since his residence in Boise, he has held two terms as president of the Northwest Electric Light & Power Assn.

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E. B. Criddle Elected Riverside Mayor

ELECTED mayor of Riverside, Calif., by the city council to replace Mayor-elect S. C. Evans, who died on Dec. 31, E. B. Criddle, for more than 21 years an employee and executive of The Southern Sierras Power Co., resigned his position as vice-president of the power company to accept the public office.

Prominent in electrical industry affairs, Mr. Criddle was president of the Pacific Coast Electrical Assn. in 1929-30. He joined the power company in 1911 as district manager of the northern division. Two years later he was made general agent, a position he held until he was made vice-president in 1923.

In civic affairs, the new mayor also has been prominent. He twice was president of the Riverside chamber of commerce and is completing his fourth term as national councilor for the United States Chamber of Commerce. He was also, for many years, vice-chairman of the industrial committee of the California State Chamber. Several times he has been chairman of important civic committees and leader of various fraternal and service organizations.

Mr. Criddle long has been an advocate of reduction in the cost of local, state and national government, and has made many talks on the subject.

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ADDISON B. DAY, president, Los Angeles Gas and Electric Corp., and for two years vice-president of the All-Year Club, a southern California booster organization, on Jan. 10 was appointed president of the club. Mr. Day also has been campaign chairman for the Los Angeles community chest.

Frank Connolly Manager of General Contractors

FRANK J. CONNOLLY, since 1929 executive secretary of the California Electragists, Southern Division, and its successor, the Electrical Contractors and Dealers Association, has been made manager of the Southern California Chapter, Associated General Contractors. Successor of Cy Geisbush as the leader of the contractor-dealers in southern California, Mr. Connolly carved out for himself by efficient management and skillful handling of affairs, as well as by force of personality, a position of far-reaching influence in the construction industry.

FRANK CONNOLLY

Born in Waltham, Mass., in 1891, Mr. Connolly, while serving an electrician's apprenticeship after finishing high school, took night courses at Lowell Institute, Boston. He worked as journeyman electrician until the war, joined the navy, for which he served as chief electrician on the U.S.S. Virginia, and the Idaho. Later he became naval electrical instructor at Annapolis, and with the Sperry Gyroscope Co. at Brooklyn. After discharge he worked as electrician in Los Angeles, leading to his becoming business agent for the union, a position in which Cy Geisbush succeeded him. He left to become supervisor of trade instruction for the Veterans' Bureau in vocational rehabilitation work.

After two years in that capacity he interested himself in orange farming, purchasing a ranch in Kern County, Near Bakersfield, which he still owns. As orange grower he was prominently identified with civic affairs, becoming director of the Kern County chamber of commerce, of the Richgrove Jasmine Citrus Association, and Tulare Fruit Exchange.

He joined the Electragists' field staff when Mr. Geisbush left to join the McGraw-Hill Co. of Calif. In handling the affairs of the southern California contractors during years of declining construction business, he was surprisingly successful in keeping a strong, representative and constructive organization together. Last year he initiated, as a private enterprise, a suggested resale price-list service, which will be continued under his direction.

The Electrical Contractors and Dealers' Association of Southern California will continue for the time being with a volunteer secretary, managed by its executive committee until business conditions warrant a full-time secretary again.

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H. S. Tittle, Pioneer Contractor, Succumbs

ANOTHER pioneer electrical contractor of the San Francisco Bay area was taken by death Jan. 9 when Horatio Seymour Tittle, proprietor of the H. S. Tittle Co., succumbed to heart attack.

Mr. Tittle was born in Georgia, 1868, attended the University of Colorado and first entered the electrical business as an operator for the Western Union Telegraph Co. Later he was connected with the Pacific Coast Telephone Co., in Los Angeles, as superintendent in charge of its underground construction in the downtown area. Later he was district superintendent for the telephone company at Auburn, remaining with that company until 1903.

In 1903 he joined the Century Electric Co. of San Francisco as one of its partners. This company was engaged upon the Fairmont Hotel, then under construction, at the time of the San Francisco fire.

After the fire he joined the John G. Sutton Co., plumbing, heating, ventilating and electrical contractors, as superintendent of the electrical department. It was in 1912 that he started his own company, the H. S. Tittle Co., which has completed some of the largest building wiring systems in the bay area. Among these were the Crocker Bldg., Shreve Bldg., Phelan Bldg., Palace Hotel, Balboa Bldg., Matson Bldg., Southern Pacific Bldg., Mills Bldg., St. Francis Hotel, Southern Pacific and Stanford Hospitals, Tivoli and Oakland Theaters, Loew's State Theater in Los Angeles, the Sir Francis Drake Hotel and the San Francisco Stock Exchange.

The business is to be carried on by Thomas Harris, who had been associated with Mr. Tittle for 30 years and long has been superintendent in charge of construction for him. Mr. Harris was president of the California Electragists, 1930 and 1931.

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APPOINTMENT of Grover C. Beckman as division manager at Lewiston, Idaho, was announced by J. E. E. Royer, vice-president and general manager of The Washington Water Power Co. Mr. Beckman, who has been district manager at Moscow, Idaho, succeeds Howard Cooper, who resigned to accept a position as commercial manager of Wisconsin Power & Light Co., at Madison, Wis.

ALLEN G. McBRIDE has assumed the duties of president and manager of Elko-Lamoille (Nev.) Power Co., succeeding his late brother, B. C. McBride.

Charles S. Newell Heads Colorado League

CHARLES S. NEWELL, engineer of Mountain States Telephone & Telegraph Co., was elected president of the Electrical League of Colorado at that body's annual poll on Dec. 19. L. M. Cargo, Westinghouse Electrical & Mfg. Co., is retiring from the presidency after two terms.

Mr. Newell joined the telephone company in 1899, shortly after his graduation from Colorado Agricultural College. He has been a member of the league advisory board for several years and has occupied a commanding position in the industry by reason of his abilities as an organizer, worker and leader.

CHARLES S. NEWELL

Elected to serve with the new president are J. C. Davidson, Hendrie & Bolthoff Mfg. and Supply Co., secretary; and O. L. Mackell, Public Service Co. of Colo., treasurer. These officers, together with chairman of the several divisions, who automatically become vice-presidents, form the executive committee. The vice-presidents are: L. A. Vosmer, representing the contractor-dealer group; Samuel Beck, distributors; R. G. Gentry, utilities; and L. M. Cargo, manufacturers.

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PAUL M. DOWNING, vice-president and general manager, Pacific Gas and Electric Co., has been elected treasurer of the San Francisco chamber of commerce after several terms as a director. With Mr. Downing, as directors, were elected Raymond M. Alvord, General Electric Co., and Joseph S. Thompson, Pacific Gas and Electric Co.

CORRECTION—In the last issue of ELECTRICAL WEST, it was reported erroneously that R. B. Bonney replaces C. R. Higson as A.I.E.E. vice-president. Mr. Higson is vice-president from district 9 and continues to retain that position. Mr. Bonney is vice-president from district 6.

DAN SHEA has been appointed assistant to H. M. Crawford, general commercial manager, Pacific Gas and Electric Co. Mr. Shea will handle sales promotion and market statistical data in addition to his previous duties.

Contractor Dealer Inspector

Contractors' Association Program in Full

Full text of the program enunciated at its Dec. 8, 1932, meeting by the newly-reorganized Association of Electrical Contractors of Northern California, sets that organization on record as standing for "constructive, yet aggressive, accomplishment of fundamental improvements necessary to bring the electrical industry back to a plane of fair dealing, profitableness to all branches of the industry, and common sense." The program continues:

"In so doing, it calls upon all electrical contractors to:

"1. Put their own houses in order, which means to become better businessmen, unmoved by the blandishments either of false sales schemes or the falser race for jobs regardless of cost. It means considering the business as a business, not a gamble.

"2. Analyze costs of doing business and make these analyses available to the industry, so that there no longer can be any excuse for not recognizing these costs in the margins or discounts provided those who sell or install equipment.

"3. Defend their own businesses and future by defending the industry against such outside rackets as foreign lamps and lighting equipment, trick gold-brick electrical products, gas engine substitution, and uneconomic municipal ownership schemes, which in the long run reflect discredit upon the industry and bring only temporary, if any, business advantage.

"4. Recognize that this is an age of change, that processes as well as methods are undergoing great changes, and that it may be necessary to alter contracting to meet these new developments or conditions.

"Because so many of the problems of contracting relate to manufacturer policy and sales methods, the association urges upon manufacturers more consideration in the following respects:

"5. Recognition of the ultimate soundness of supporting and making business profitable for a high-grade type of business contractor, so that there will be some incentive for contractors to meet the specifications of such a type in their own business conduct, and that new contractors, as business improvement warrants, will be recruited from men who can develop into good business men.

"6. Margins and discounts be established on stable lines of merchandise or equipment based upon the true facts as to cost of distributing such products, and not guesswork or hope.

"7. That distribution of their products be reasonably and intelligently restricted to the number consistent with the market, and, furthermore, that consideration be given by them to their competitors, big or small, recognizing that they too must be allowed to share in the market. If they are not accorded that consideration, experience certainly proves that the competitors may take it upon themselves to break into such markets at the expense of the entire industry.

"8. Arrival at some reasonable classification of trade and that consistency be followed to the extent of making the same classification for wholesalers operated by such manufacturers.

"9. That a real analysis be made of whether or not direct selling really pays when it brings into its wake a demoralized contractor, wholesaler, price, and quality situation and increases sales cost by duplicating and triplicating sales effort.

"The association, in addition to the foregoing considerations asked of manufacturers, urges upon wholesalers besides:

"10. A determination whether the future functioning of a wholesaler does not call for a decision as to the field and extent of wholesale distribution and its limitations, so that it may be determined whether the wholesalers cannot re-establish themselves as the buyers for and complete supply source of the contractor, becoming the agent of the contractor a little more and of the manufacturer less.

"11. That jobber salesmen's activities be promotional and compensated for upon that basis, so that the temptation to sell direct now presented in their compensation scheme will be eliminated, so that they can better fulfill their function as the advisor, buying agent, salesman and expert on a product which the contractor needs to help him in his sales and business development. As long as the contractor must consider the jobber salesman as his competitor, there is little hope that the jobber salesman can perform these really necessary functions for him. The great investment both of the manufacturer and the wholesaler in advertising, sales promotion and personal selling effort cannot help but be checkmated by contractors in their own self-preservation as long as they are in a competitive position to those who should be allies.

"To the central stations, the contractors urge that the excellent policies enunciated by the officials and head offices as respects merchandising be given a better chance to find their way into actual practice by:

"12. More careful consideration of the profitableness to cooperating dealers of some of the sales programs prepared by utilities. As it is, an unattractive sales program breeds disgust rather than a cooperative effort on the dealer's part. Utilities should realize that the business advantages under which they operate, where revenues from use can justify and render profitable even some losses on merchandise selling, are not available to dealers. This disparity of economic position gives rise to the dissatisfaction and rancor which has led in the past to anti-merchandising movements.

"13. More consideration, when work is to be done, as to the ultimate advantage of favoring those whose efforts in the industry are consistent with good service to the public. In other words, the ultimate economy of cheap wiring or of cheap contracting, as opposed to the value of the support of good substantial contractors, really should be studied. Likewise, an effort should be made, where head office policy is basically fair and commendable, to see that this policy more often finds itself practiced in relation to salesmen's activities and district management attitude.

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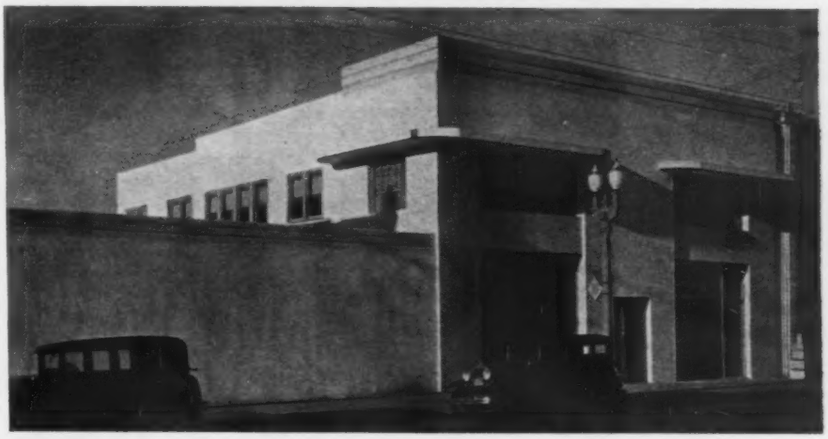
Consolidating in the 1933 Manner



CONSOLIDATION of position is a fashion these days, but when the Newbery Electric Corp., of Los Angeles, consolidated its warehouse and yard with its offices it did so in an extraordinarily special manner.

The firm, established in 1903 by Glen Arbogast, who has been president and manager continually since then, was started in the basement of the Stimson Building. Some years lated it moved to 726 South Olive St., and opened a merchandising business. As the company continued to grow it was found necessary to obtain warehouse space outside of the busy downtown section. This was found on Venice Blvd., where the company built a brick warehouse and metal shed for heavy material. Last year it was decided to modernize the building and to discontinue the retail store on South Olive St., moving the contractor offices to the one location.

Wilson & Merrill, architects, specializing in this type of work, designed a modernistic type of building. Overhead of the company was materially reduced by eliminating the retail department and condensing operations in one location. Los Angeles has rapidly been growing in that direction, and the new location on Venice Blvd. finds itself centrally located for handling the type of construction work of the company, spread out over all of southern California.

On the main floor, a display for the advertisement of the company at the entranceway is provided. In this is shown street lighting and heavy equipment. One section of the lower floor is rented to an outside tenant. The rear of the lower floor, back of the display, is used for warehouse facilities.

Upstairs the offices are maintained. At the front are the offices of Glen E. Arbogast, president and manager, and R. C. Spilsbury, vice-president in charge of construction. D. D. McFarlane, secretary and treasurer, and the sales and estimating departments occupy the space in back of the two front offices.

Some of the recent big work the company has done includes the Los Angeles County Hospital, for which the fixture contract has also been secured. Likewise, the ammunition depot at the Naval Base in Honolulu, the Sixth Street Viaduct over the Los Angeles River and the Vernon power plant.

"To the industry, through the Pacific Coast Electrical Bureau, the contractors address this plea:

"14. That the functions of each branch of the industry be better defined and understood, and that, in campaigns, slogans, sales programs, Red Seal activity or other work undertaken by the Bureau and requiring industry and contractor participation, the tests of profitableness and real and permanent value to the industry be considered. The Bureau officials have long deplored the lack of participation in its programs by contractors. Unfortunately, by such participation they have misjudged salesmanship or business qualifications of contractors. As this association conceives it, the Pacific Coast Electrical Bureau has before it an opportunity which it has never yet realized, that of becoming a genuine forum for industry problems, not as in the past merely the sales aspects of such problems, but the sound economic study into the problems and their consequences."

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Building Congress Would Amend Construction Law

Several proposed legislative changes to the California laws pertaining to building and construction, prior to presenting them to the present session of the legislature, have been under consideration by the executive committee of the California Building Congress, both northern and southern sections. This congress has been organized by the California State Chamber of Commerce as an aid to the construction industry.

Among these proposed legislative measures are amendments to the present laws relating to trust deeds, amendments to the mechanics lien law, special legislation to permit application for funds under the Federal Home Loan Bank act, special legislation to permit application to the R. F. C. for funds to construct self liquidating sewage and waterworks projects, and legislative action for the spreading of work on field construction work, with a proposal to limit the hours of not only men but machines. A resolution urging the legislature to establish standing committees in both houses to deal with construction legislation was unanimously carried.

Trust deed law revision proceeds along lines to give longer and more complete notice of foreclosure sale of property in default of payments, to delay forced sale on technical grounds such as unpaid insurance or taxes, and to limit deficiency judgments following a forced sale to the difference between the market value and indebtedness; likewise to require that such deficiency actions must be brought to court within 6 months of the sale.

Revision of present lien laws, instead of adopting the uniform lien law developed by the U. S. Department of Commerce, is planned. The revision contemplates changes to provide for transfer of the lien to other security than the real estate itself in order to clear title, limitation of owner's liability to the contract price, establishment of a "visible commencement of work" date by recording.

Work spreading legislation involves some bold steps, percedent for which does not exist, but justified by the emergency nature of the unemployment situation, according to Frederick Whitton, chairman of a committee authorized to submit a proposed act on the subject.

Mr. Whitton established the justification for the proposed legislation upon four points: 1, The depression must be considered of more or less permanence in that short-time panaceas will not solve the basic and dangerous problem of unemployment. Hence emergency measures are required, regardless of traditional practices. 2, Voluntary action, because of the competitive situation, cannot cope with the problem. Only legislation will force all to meet the same conditions. 3, Because of interstate complications and federal laws, particularly the 14th amendment, legislative action must limit itself to field construction work strictly within the state. 4, Labor cannot be expected to bear the entire brunt of work rationing. Power-driven field machinery also must be limited as to working hours.

To provide the maximum of flexibility within the limitations of work set-up, nothing is to be specified as to the number of hours per day or days per week. A 30-hour week, for any man, and a 60-hour week for any machine, will be maximum. This allows two-shift operation, but prevents overuse of machinery at the expense of employment. A point made in discussion was that if costs are increased slightly, society must assume such costs or else face the greater costs of relief and incipient disorder.

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MAURICE H. SEID, member of the firm of Dowd-Seid Electric Co., 2118 Mission St., San Francisco, was recently elected president of the Mission Street Merchants' Assn., for which organization he has served five years as second vice-president.

CALIFORNIA ELECTRIC WORKS, San Diego, is taking care of the electrical work incident to the excavation and quarrying of rock for the new El Capitan dam for the San Diego city water system. The dam is of rock-fill construction similar to the Salt Springs dam of the P. G. and E. Co., and utilizes some electric shovels.

CLINE ELECTRIC SHOP, at San Luis Obispo, Calif., has rearranged its display so that a fixture room, a second-hand equipment room, and a radio repair shop are provided in less space than formerly occupied. This releases window and store space for subletting. The fixture room is arranged on the mezzanine floor and is finished with five types and colors of paper, one on each wall and one on the ceiling. This allows the display of fixtures against any of this choice of background. The second-hand room is used to display trade-in merchandise and has been a successful feature of this merchandising store.

FRED H. HUME, president and managing director, Hume & Rumble Ltd., Vancouver and New Westminster, is running for election as mayor of New Westminster, B. C. Mr. Hume is the head of the largest electrical contracting firm in Western Canada and has been a member of the New Westminster city council for the past ten years, and is president of the New Westminster Board of Trade and the famous Westminster Royals football team, former Dominion champions.

L. F. STOKES, who for some years has had an electric shop at Guadalupe, Calif., recently opened a Westinghouse authorized merchandising store at 215 E. Main St., Santa Maria, Calif.

SAN DIEGO ELECTRIC CO., of which Bruno Barth and Durlin Flagg are proprietors, have just completed the wiring for the new Natural History Museum in Balboa Park, San Diego, Calif. The building was erected on the site of the former Civic Auditorium which had been made from one of the 1915 Exposition buildings and since had burned down. The building was donated to San Diego by the late Miss Ellen Scripps, and is a permanent Class A concrete construction.

Other recent jobs of this company were the combining of loads of the Holzwasser Department Store and Owl Drug Store building, recently taken over by the former, so that the complete load would be on one meter. This company also installed much outline Neon lighting for Standard Oil stations in the vicinity and added to the lighting at the Navy field for motorcycle races.

WITH its previous electrical ordinance held invalid by Judge Nephi Jesen, of Salt Lake City, City Attorney Fisher Harris rushed to the city commission early in January with a new ordinance for passage. The old ordinance was thrown out after injunction proceedings had been brought by C. Lamont Felt, of Felt Electric Supply Co. Particular attack was made on the old ordinance on its licensing of contracting electricians. The city was left in a position of not being able to issue permits for wiring except to licensees. The new ordinance proposed by Harry L. Finch, commissioner of parks and public property, includes an electrical inspection department and retains the regulation of electrical installations. The Electrical League of Utah has advised the city that it thinks the new ordinance inadequate.

CORNELIUS F. COLLONAN, electrical contractor-dealer at 3201 Mission St., San Francisco, was recently appointed a member of the City Planning Commission by Mayor Rossi, of San Francisco.

RALPH'S ELECTRIC SHOP, formerly located in the I.O.O.F. Bldg., Indio, Calif., has moved to 202 Fargo St. The shop is conducted by Mrs. R. Alden.

Manufacturer Distributor

Hotpoint, G. E. Split Range Lines

No more will electric ranges trademarked "General Electric-Hotpoint" be marketed by Edison General Electric Appliance Co., Inc. Effective Jan. 1, the Edison organization announced it will concentrate effort on a new line of ranges to be marketed nationally under the trade name "Hotpoint." General Electric Co., from its Cleveland headquarters, will sell a line of "General Electric" ranges.

At the same time a specialty appliance sales department has been established by the G. E. company under the general direction of P. B. Zimmerman, who also will continue as manager of the company's electric refrigeration department, it was announced by T. K. Quinn, vice-president. The specialty sales department will assume complete responsibility for the distribution and sale of General Electric ranges, dishwashers and kitchens.

Under the new arrangement, G. E. ranges will be sold exclusively through G. E. refrigerator distributors and dealers, but factory sales representatives will contact directly the public utilities and important range dealers for the Edison company's Hotpoint ranges, using the facilities of the General Electric Supply Corp. The latter group of ranges will be lower priced than those made by General Electric.

Hotpoint's district managers in the western territory include: B. E. Rowley, Salt Lake City; J. C. Platt, Seattle; C. N. Willard, Los Angeles. They will head specialized sales organizations for the promotion of the line, marketing through G. E. Supply.

Hotpoint Stages "On to Chicago" Contest

Edison General Electric Appliance Co. has just publicly announced an "On to Chicago" nation-wide contest for retail salesmen of Hotpoint ranges. The contest runs from March 1 to June 30, with the winners assembling in Chicago for one week in August at the Century of Progress exposition.

Promotion of the contest will be directed from Chicago with the aid of public utilities and retail selling organizations in all parts of the country. Dramatic promotion material is being prepared for use by salesmen; localized direct mail will be used, with advertising, cooking schools and a retail salesman training course.

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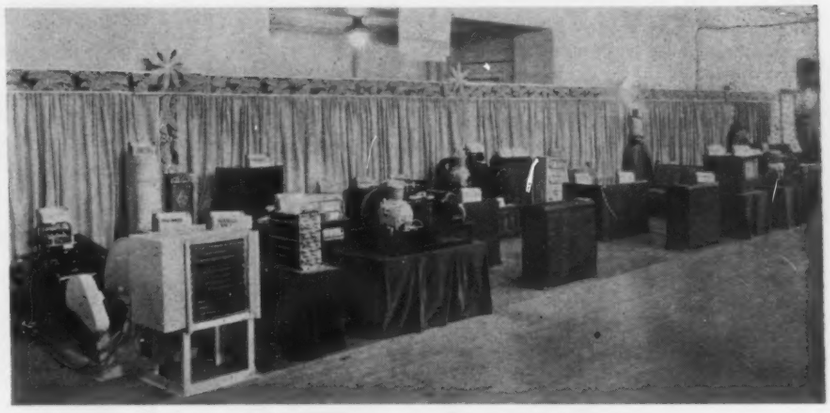
CLAUDE A. PEARSON, manufacturers' representative, has moved to 163 Second St., San Francisco. He represents Hexacon Electric Appliance Co., manufacturers of electric soldering irons.

Air Conditioning Display



Frigidaire Corp. had a sizable exhibit of air conditioning at the recent San Francisco electrical exposition. Practically every type of Frigidaire unit was shown, the display receiving considerable attention

First Washer Prices Raised by Easy

First to see the trend and lower its prices in 1930, Easy Washing Machine Corp. now is the first washer manufacturer to raise prices from the levels of 1932. With the announcement of two new washers, the company has established $69.50 as the lowest price in its line for an wringer-agitator washer. The $59.50 Easy has been discontinued. Other models vary in price to $165.

Whether other manufacturers immediately will follow with higher prices is not known. It is known, however, that washer sales are badly off (30 per cent) and that dollar volume is even worse (51 per cent decline). This price decline has led to agitation in recent months that washer prices be stabilized through patent licensing, although nothing definite has come from the discussion.

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Junior Cookery Council Formed in Los Angeles

"To amalgamate the various branches of the electric range industry into one common organization to effect a closer affiliation of ideas toward the advancement of the electric range industry" is the stated purpose of the Junior Electric Cookery Council of Southern California, formed in Los Angeles in January. Officers elected at the first meeting were: J. Cambell Hoyt, Walker Pratt Mfg. Co., president; W. T. Schenck, Schenck Specialties Co., vice-president; H. S. Stewart, Lindemann & Hoverson, secretary; and Frank Norton, Norton & Norton, treasurer. Directors are: C. H. Dye, Los Angeles Bureau of Power & Light; H. J. Drexel, Southern California Edison Co.; Louis Singleton, California Wholesale Electric Co.; W. A. Marsdon, George Belsey Co.; N. H. Van Warner, Ungar & Watson; and Elbert Kramer, Westinghouse Electric & Mfg. Co.

Among the intentions of the council, as stated in the constitution and by-laws, is one to hold examinations to qualify range service men and technicians, so as to improve service to the public.

Membership is open to anyone actively in the range industry in the territory, with active membership for those who are engaged in the sale or promotion, and honorary membership for executives, distributors and retailers.

Among matters to receive first consideration and support was an electric range week held in Los Angeles beginning Jan. 16, during which upwards of 50 dealers cooperated with special displays and demonstrations.

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Graybar Offices Hold Sales Conferences

With the arrival of D. H. O'Brien, general merchandising manager, Graybar Electric Co. Inc.; Stuart Symington, president, Colonial Radio Corp.; P. D. Briggs, vice-president, Ilg Electric Ventilating Co.; and Al Smith, general manager, Walker-Pratt Mfg. Co., at the sales offices of the Graybar company in the West, these offices are holding their annual sales conferences.

The four Eastern executives first stopped at Seattle the week of Jan. 9 and have progressed southward on a tour of all Graybar offices.

▼

FARNHAM & CUNNINGHAM, Los Angeles, have been appointed California representatives for Haveg Corp., manufacturers of chemical corrosion-resistance equipment; southern California representative for Continental Diamond Fiber Co. and for Metropolitan Device Corp., manufacturers of Murray distribution devices. They also have the manufacturing and sales rights for the Euwer Universal ground clamp.

HAROLD H. CAKE, formerly with the Portland office of General Electric Supply Corp., has been transferred to the company's Los Angeles office.

Frigidaire Returns To 1-Year Guarantee

In returning to a one-year guarantee on all types of its equipment, Frigidaire Corp. disclosed that it believes a long-time guarantee means much less to the customer than the name and reputation of the company.

"We feel that a guarantee of one year or even less is a sound way to sell refrigeration products," said E. G. Biechler, president and general manager. "Such guarantees have proved highly satisfactory in merchandising other mechanical products. Unusual competitive conditions were responsible for the appearance of the long-time guarantee. These conditions brought a situation where the factory guarantee became a competitive selling point, with guarantees stretching to absurd lengths and salesmen talking competitive guarantees rather than the merits of their particular products."

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Electrical Credit Group For Trade Acceptances

By unanimous action of its board of managers, the National Electrical Credit Assn. has gone on record as favoring the general use of short-term trade acceptances from responsible customers in payment for goods sold, and the giving of trade acceptances in payment for goods bought. Such trade acceptances could be discounted at banks or sold to banks through note brokers. The association feels that, by the substitution of a trade acceptance for an open account obligation, not only is the maturity more definite, but there is a definite and specific acknowledgment of the obligation.

▼

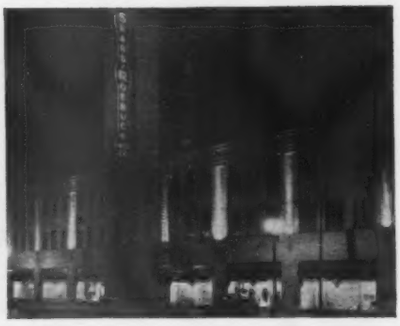
ROSS L. MAHON, formerly sales manager for Pelton Water Wheel Co., now is affiliated with Ford, Bacon & Davis, Inc., consulting engineers of San Francisco.

H. J. NEWTON, Pacific Coast manager, National Electrical Products Corp., was a Seattle visitor the week of Jan. 16, as guest of Norman L. Bost, Seattle representative for the company.

ROY MYERS, San Francisco, has been appointed representative for the Inland Glass Co., of 20 North Wacker Drive, Chicago, manufacturers of illuminating glassware. Graybar is stocking especially the modernistic pieces featured by this line. Mr. Myers also handles Curtis Lighting, Inc., equipment in the San Francisco area. Los Angeles representation for Inland Glass Co. is handled by Fred Mills.

FRITZ HOVING has been appointed West Coast district sales manager for The Babcock & Wilcox Tube Co., to give A. M. Castle & Co., B. & W. West Coast agent, the assistance of a direct mill representative. Mr. Hoving will make his headquarters with the Castle company in Los Angeles.

Catalog Stuff



Golden Glow units, made by Electrical Service Supply Co. and distributed by Schleicher & Co., San Francisco, were used to floodlight the facade of this Sears, Roebuck branch in Oakland, Calif. Electrical installation was by Cooper Electric Co., Oakland

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J. C. DOUGLAS, vice-president and general manager, Lojas General Electric Co., merchandising and sales organization at Rio de Janeiro, Brazil, spent several recent weeks on the Pacific Coast. Before his affiliation with General Electric Co. in South America in 1931, Mr. Douglas was with Edison General Electric Appliance Corp. and L. H. Bennett Co. Ltd. in San Francisco.

ED. H. FISHER, sales manager, Pacific Wire Rope Co., Los Angeles, has announced the appointment of Stannard Arnold as agent for Pacific Wire Rope products in Utah, Wyoming, Montana and Idaho. Charles W. King has been appointed resident salesman in the same territory, headquarters of both men being in Salt Lake City.

THERMADOR ELECTRICAL Mfg. Co., Los Angeles, has announced the appointment of Listenwalter & Gough and of Westinghouse Electric Supply Corp., both of Los Angeles, as jobbers for Thermador air heaters and Everhot water heaters. Graham-Reynolds Electric Co. and Graybar Electric Corp. also are distributors of this line in Los Angeles.

W. NEAL GALLAGHER, president, Automatic Washer Co., has been on the Pacific Coast conferring with representatives of the washer company.

J. CAMPBELL HOYT has joined the Pacific Coast force of Walker & Pratt Mfg. Co., makers of Graybar-Crawford ranges. He will have headquarters in Los Angeles and will cover southern California, where he is well known, having been for six years with Southern California Edison Co. and more recently with George Belsey Co., and Hotpoint range division, General Electric Co., in Los Angeles.

RUSHBY C. MIDGLEY, Salt Lake City has been named Barber-Colman Co. distributor in Utah, southern Idaho and western Wyoming. Barber-Colman Co. makes electrically-operated temperature control equipment.

Steel and Tubes Wins Court Case

After litigation extending over 8 years, the United States Supreme Court has refused to review a Court of Appeals decision favorable to Steel and Tubes, Inc., Cleveland. The case involved infringement on the Johnston patents covering electric resistance welding of tubing and pipe. These patents are owned by Steel and Tubes. Many cases have been filed and won by Steel and Tubes, but this is the first case involving its patents which has been brought to the Supreme Court.

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Good Cooperation in Christmas Campaign

With statistical tabulations complete, it is found that the cooperative Christmas campaign of Rocky Mountain Division, N.E.L.A., was embraced by 15 utilities and more than 300 electrical dealers in Colorado, Wyoming and New Mexico.

Including 56 electrical, 19 hardware and 13 music stores, 113 Denver firms participated, exclusive of the 200 concerns in 56 smaller towns throughout the three states. Three outside divisions of N.E.L.A. sent to Denver for Rocky Mountain publicity matter to conduct their own campaigns.

Reports by George E. Lewis, division manager, show that 210,000 small stickers, 86,000 pamphlets listing appropriate gifts, 3,000 streamers, 4,500 wreaths, 100 mailing tubes and 81 billboards were used by those who took part in the movement.

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G. HAROLD PORTER, formerly vice-president in charge of Pacific Coast activities for Radio Corp. of America, in January was made vice-president in charge of Pacific Coast for RCA-Victor Co. He has moved his offices from San Francisco to Hollywood.

MITCHELL J. HAMILBURG, Pacific Coast manager, Plymouth Rubber Co., Inc., with headquarters in Los Angeles, is now on an extended trip covering the eleven Western states.

THE ELECTRIC STORAGE Battery Co., makers of Exide products, have moved their branch office in Seattle to 1919 Smith Tower Bldg.

Market Review

California and Intermountain—

BUILDING construction reports in the San Francisco Bay region were somewhat affected during last quarter by preliminary bridge work. Therefore, the 1932 total of $16,427,915 for San Francisco compared favorably with the 1931 total of $21,372,550, a decrease of about 23 per cent, which is about half the national decrease. Southern California reports show a decrease of about 50 per cent, though the gigantic

Metropolitan Water project will overcome this percentage in 1933.

Bids for additional transmission lines and substations for this project have been held up pending the result of rebidding on the necessary poles and cable, which includes 30,000 ft. of 500,000-circ. mil, 5,000-volt, 3-conductor, l.c., paper insulated cable.

Government work continues to furnish the bulk of prevailing construction, including a service system extension for the Sunnyvale dirigible base, 30 sets of officers' quarters for Rockwell Field at Coronado, a $350,000 job for similar work at the Marin Bombing Base, and post offices at Marysville and El Centro. Excavation is proceeding for the Federal Building in San Francisco and will soon begin for the Psychopathic Hospital, an estimated $32,000 electrical job.

Other recent awards include $6,300 for lights along the Bayshore Boulevard in San Francisco and $17,000 by the City of Vernon for additional generating equipment. Apartment houses, dwellings, office buildings and the like are at an absolute minimum, two $50,000 dwellings on the San Francisco peninsula being outstanding. School work, too, is very stagnant, except for an estimated $25,000 electrical job in a new Sacramento school.

Copious, if belated, rainfall has restored the tone of agricultural prediction, and though cold weather has hurt such districts as the early citrus belt of the upper Sacramento Valley and the like, this particular natural resource will bear its share of the economic load. Lumber production has increased slightly, with increased export sales, and the mills, despite a high percentage of shut-downs, are averaging about 1/5 of capacity.

Machinery manufacturers report very quiet conditions. Their January volume has not decreased so much from present monthly average, principally because, with power company, railroad and industrial purchasing limited to barest necessities, there is a certain inevitable level which cannot very well be decreased. However, there are no outstanding orders, either, though February reports are expected to show some big awards on jobs now being figured.

Prices in various wiring staples have dropped here and there because of distributors' cost decreases, offset partially by increases in other lines. The market seems to be firmer, and the annual inventories reflected careful purchasing and stock-keeping, with many staffs reduced on January 1 to new lows in pay and personnel.

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Pacific Northwest—

BRIGHT spot in the drab situation in Seattle and the Puget Sound district is the fact that central stations and lumber mills, particularly the former, must start buying. Recent inventories show materials, apparatus and equipment shortages which require immediate attention, authorities state, and buying cannot be delayed much longer. These shortages include not only meters and transformers, but wire, cable, hardware, poles and ranges, it is claimed. Buying on a considerable scale should start within the next 30 to 60 days.

Tacoma's board of contracts and awards on Jan. 23 opened bids for furnishing approximately $25,000 worth of incandescent lamps for 1933, but no award has been made to date.

Seattle's city council has authorized a call for bids for the completion of the hydro-electric power house at Diablo, for the completion of a transmission line from Diablo to Gorge plant, and for construction of remainder of the City Light building and substation. Two sets of bids will be accepted, with date of opening designated as March 13. Estimates of cost range up to $1,625,000, amount of R.F.C. loan tentatively offered City Light.

Barometer

DESPITE the usual decline, which brought the December all-industry index 7 per cent under November, industrial activity gradually is approaching the rate of a year ago. It is down less than 4 per cent from December, 1931. Not only was the decrease from November smaller than in any year since 1927, but the trend since midsummer has been definitely upward.

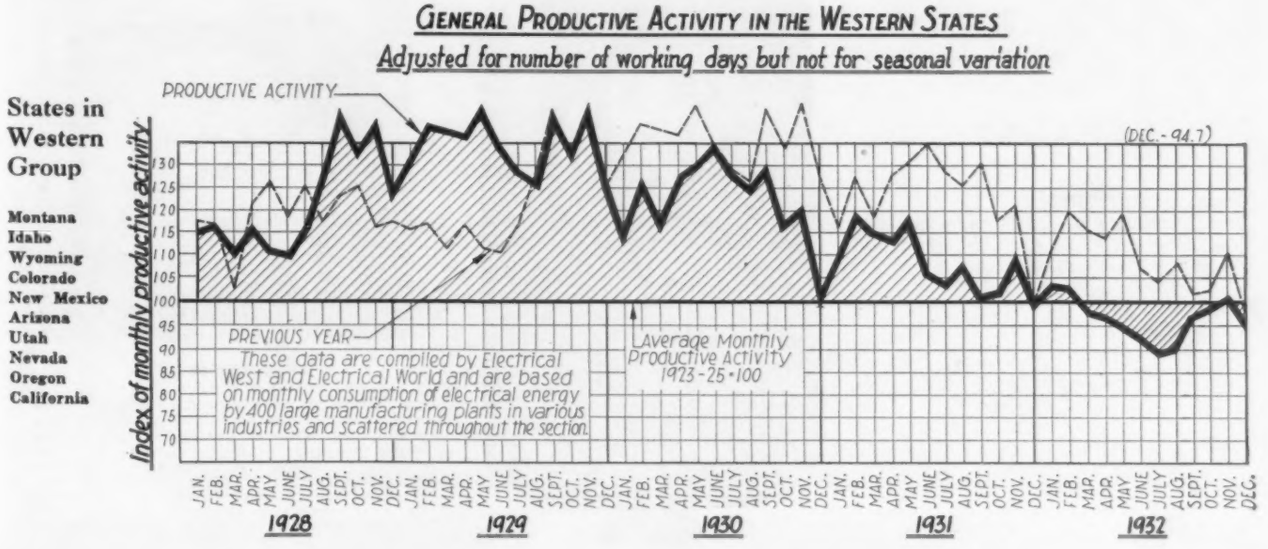
Forest products and the stone group are down less than usual, indicating more than seasonal maintenance of construction activity.

Indexes of Manufacturing Activity in the Western States

(All figures adjusted for number of working days)

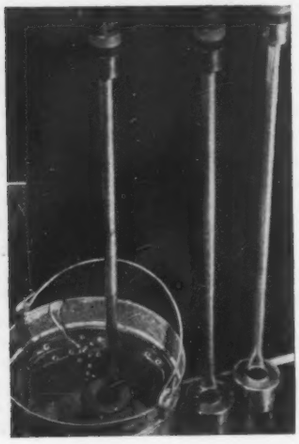
	Dec., 1932	Nov., 1932	Dec., 1931	Avg. for 1932
All industry	94.7	101.3*	98.3	96.1
Chemicals	76.8	82.2*	88.3	85.5
Food	113.2	113.0*	134.4	116.6
Metals group	38.6	43.1*	42.7	40.5
Forest products	133.2	145.7	124.8	124.5
Paper and pulp	125.5	141.7*	120.1*	129.9
Rubber	50.2	62.5	53.7	92.1
Shipbuilding	112.4	113.0	87.8	100.0
Stone, clay and glass	65.5	77.7*	79.0	78.9

*Revision



New Products

Portable Water Heater



Edwin L. Weigand Co., Pittsburgh, has introduced a portable electric immersion heater, rated 1,300 watts for 115 volts, especially for use on farms and for spot heating of 1-10-gal. quantities of water. Chromalox heating element; nickel-plated finish; rubber-covered cord. Price, $12.—Electrical West, Feb. 1, 1933.

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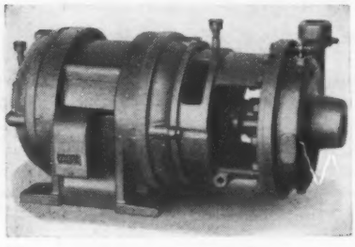

Pumping Units

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has extended its line of SU motor-driven single-shaft, two-bearing pumping units to include three sizes to work against heads up to 100 lb. (231 ft.) and above and covering capacity range from 30 g.p.m. to 140 g.p.m. Single shaft, ballbearing supported, is used to mount motor rotor and pump impeller.—Electrical West, Feb. 1, 1933.

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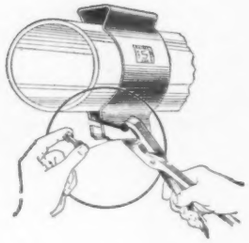
Cable Clamp



Developed by Paine Co., Chicago, a new conduit and cable clamp is provided with a slot into which the bolt with nut attached slips into place. A bolt the right length is supplied, obviating cutting. Supplied in ⅜ to 2½ in size.—Electrical West, Feb. 1, 1933.

Water Heaters

The Standard Electric Stove Co., Toledo, has developed a new line of water heaters for use in barber and beauty shops, offices, bathrooms, etc., with an outside case in rust-proof porcelain enamel finish, light green with black striping. Pressure tank insulated with mineral wool. Attaches to convenience outlet. Made in 6, 8 and 12-gal. sizes, automatic or non-automatic.—Electrical West, Feb. 1, 1933.

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Sump Pump

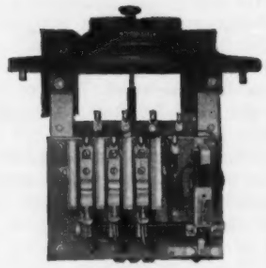
A new portable, air-operated sump pump, consisting of an open-impeller type centrifugal pump driven by a "multi-vane" air motor and both enclosed in a one-piece housing, has been introduced by Ingersoll-Rand Co., New York. Intended for lifts of 10-40 ft. with air pressure 70-90 lb.—Electrical West, Feb. 1, 1933.

▼

Watthour Meter Case

An aluminum-alloy, die-cast case for protection of single-phase watthour meters of modern construction has been announced by General Electric Co. Corrosion-proof, it protects the meter in adverse weather conditions. Manufacturer claims water cannot enter case through space between meter cover and box cover because of thick rubber gasket. Access to meter is impossible without leaving positive evidence.—Electrical West, Feb. 1, 1933.

Magnetic Switches



General Electric Co. has a new line of full-voltage magnetic switches built to Underwriters' standards for industrial control equipment; for use in Class 1, Group D hazardous locations where inflammable or volatile liquids, gases or mixtures are stored, manufactured, used or handled. Weatherproof, suitable for use in corrosive atmospheres. Special contact tips operate under oil; has oil-immersed overload relay. A pushbutton station for use with these switches also has been developed.—Electrical West, Feb. 1, 1933.

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Westinghouse Ironers

Different in design, two electric ironers are being marketed by Westinghouse Electric & Mfg. Co. Two models, portable and floor; both employ under-roll, front-feeding principle. Foot and fingertip control provided. Adjustomatic heat control maintains any selected temperature from 330-550 deg.

Westinghouse also has brought out a new vacuum cleaner in an antique silver finish. Weighs 11½ lb. Retail price, $29.95.—Electrical West, Feb. 1, 1933.

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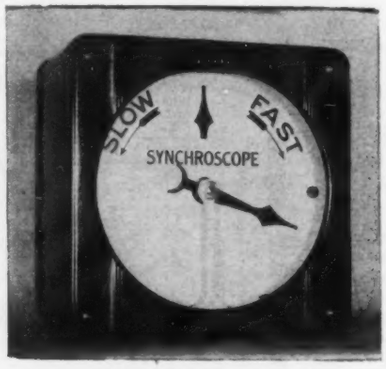


Synchroscope

To complete the line of square switchboard instruments, Westinghouse Electric & Mfg. Co. has developed a synchroscope of the moving iron vane type. Low energy consumption, burden of each circuit being about 4 volt-amperes. Position indicators and 360-deg. scale power factor meters also available in this form of instrument.—Electrical West, Feb. 1, 1933.

When it's Harder to Sell...
Sell Harder
• Edison adopted the Policy of selling harder two years ago, and it has helped. The electrical industry has kept chins up; has thought constructively, and worked constructively. While sales have slumped, of course, the electrical industry is in a better position than most to meet the new deal half-way, and advertising, again, has proved a splendid lubricant.
There's more than a possibility that just a little more printers' ink used intelligently at this particular moment, might do a great deal to speed up the recovery.
SUNRISE CAMPAIGN
Buy NOW
THE SCIENTIFIC WAY TO COOK
Southern California EDISON
ELECTRIC IS LIKE HAVING A MAID AT NO COST
The Westinghouse Electric Range Gives You
Electric Sterilizers For The Modern Dairy
You Wouldn't Irrigate Your Farm With a Fire Engine

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

A new way to BUILD PROFITS

Would you like to know more about an entirely new sales approach which has been amazingly effective in improving customer relations, adding good-will and building bigger commercial load? This method, which has been operated for several months on a profitable basis, requires an initial investment of less than $100, plus the time of one salesman. We have helped in the development of this plan and will be very glad to make this experience available to you. ¶ Write to the sales division which supplies you with lamps. General Electric Company, Nela Park, Cleveland, Ohio.

EDISON MAZDA LAMPS

GENERAL ELECTRIC

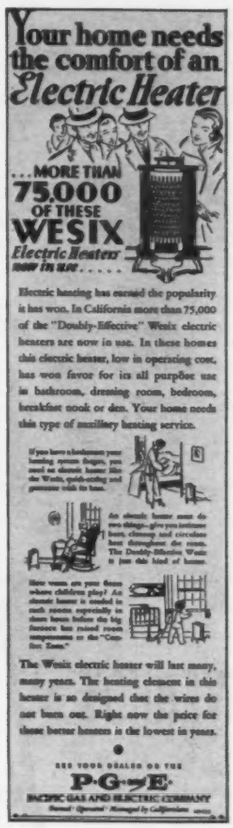
SELL

Portable Electric Heaters

While Cold Weather Lasts

TO sustain volume sales of portable electric heaters another month, Pacific Gas and Electric Company is publishing these two advertisements during February in newspapers in all electric territory.

This advertising, together with prevailing cold weather, is certain to stimulate hundreds of last minute buyers to the point of purchase. Each message invites prospects to see their local dealer.



The actual size of each of these advertisements is 2 columns by 15 inches. The one on the left will also appear as a 2 column by 10 inch advertisement in weekly newspapers, electric territory.

about it with TIE-IN ADVERTISING as others are doing.

If you have never used tie-in advertising, follow these easy steps:

1. Call your local newspaper offices and ask when these advertisements are to be published.
2. Prepare an advertisement that will let prospective buyers know WHO you are, WHERE you are, and that your store is headquarters for portable electric heaters.

Do not let these prospects go unsold. Tie in with this advertising. Identify your store as THE place in which to buy portable electric heaters. Don't leave it to prospects to discover that YOU are the dealer our advertising invites them to see; *tell* them

3. Make certain your advertisement is published along side advertisements reproduced on this page. In this manner, a larger percentage of the prospects created by P. G. and E. advertising will be directed to your store.

P · G · and E ·

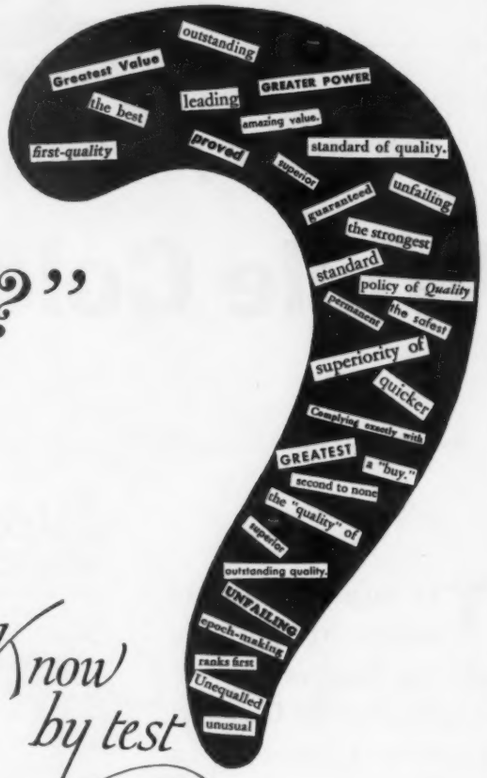
EW-102-238

PACIFIC GAS AND ELECTRIC COMPANY

OWNED . OPERATED . MANAGED BY CALIFORNIANS

Why the *buyer* sometimes says:

"Oh Yeah?"



Possibly each one of these *claims*, clipped from an issue of an electrical publication, could be proved BY TEST to be true

—but buyers frequently doubt unsupported superlatives.

ELECTRICAL TESTING LABORATORIES
80th Street and East End Avenue
NEW YORK, N. Y.

THE

THERMADOR - EVERHOT

IS THE

LONGEST LIVED
MOST EFFICIENT
WATER HEATER
EVER BUILT.

INVESTIGATE!

THERMADOR ELECTRICAL MFG. CO.
INCORPORATED

SUCCESSORS TO
HOFFMAN SPECIALTY CO. OF CAL.
EVERHOT ELECTRIC MFG. CO
LOS ANGELES

ICE, SLEET .... miles of line down .... Wire stocks inadequate .... Rush shipments imperative .... Then, look to Jobbers of *Crapo* Galvanized Wire and Strand!

You can depend upon them in every emergency .... and, they in turn, can depend upon us .... for, they know from long experience, that RUSH orders received by us in the morning are shipped before night!

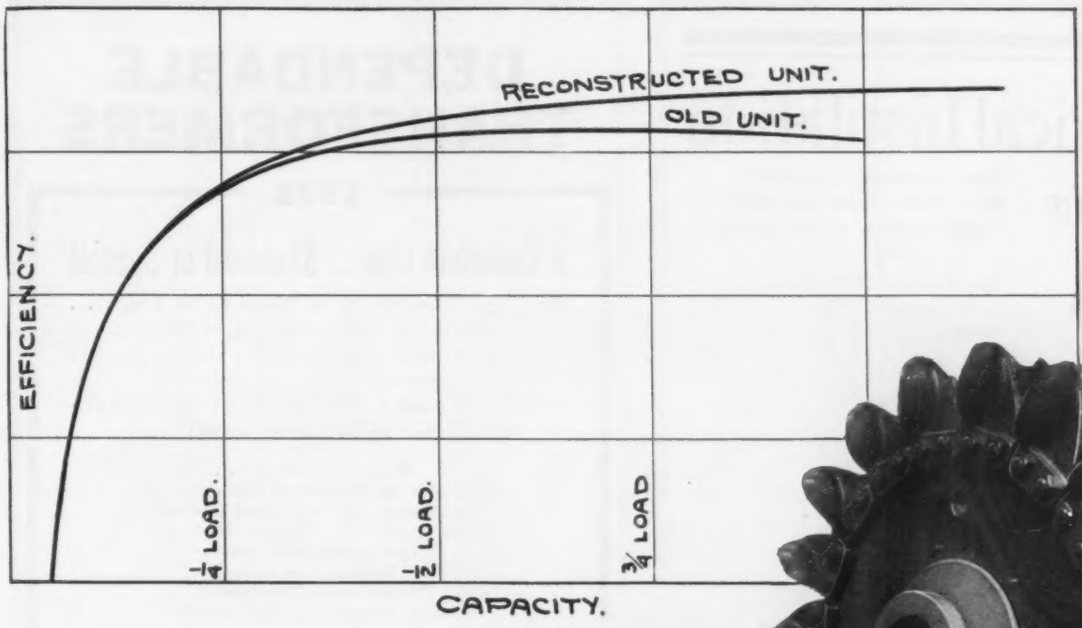
Indiana Steel & Wire Co.
Muncie, Indiana

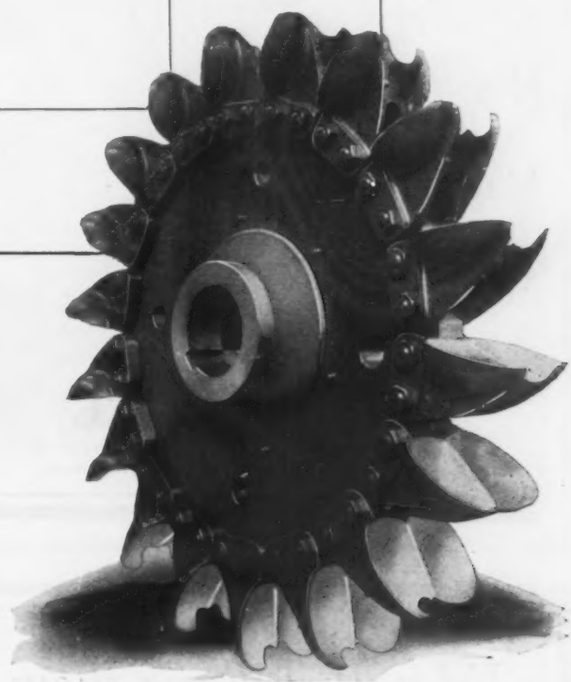
Galvanized Telephone Wire and Steel Strand

Look for the *Crapo* Tag

INDIANA STEEL & WIRE CO. Crapo Galvanizing MUNCIE, IND.

Crapo
GALVANIZED PRODUCTS





Rehabilitation

Has Proved Itself in Spite of Lowered Power Demands....

OBVIOUSLY there is little consideration to be given to hydro plant extensions or additions with the present demands for service. Plant reconstruction, however, is of importance during these times, as always, for the known advantages that accrue regardless of the load curve. Some plants, full time operation of which has been required in the past, may now be released from the system to undergo a systematic inspection and possible replacement of needed parts. Relatively small expenditure for parts will yield big dividends in the form of better operating characteristics, greater safety, reliability and other desirable attributes of the modern hydro plant.

Pelton engineers are prepared to cooperate in every way with those considering plant improvements.

THE PELTON WATER WHEEL COMPANY

HYDRAULIC ENGINEERS

120 Broadway	2929 Nineteenth St.	Paschall Station
NEW YORK	SAN FRANCISCO	PHILADELPHIA

Pacific Coast Representatives for BALDWIN-SOUTHWARK CORPORATION, DELAVERGNE ENGINE CO., and LARNER ENGINEERING CO., of Philadelphia, Pa.

PELTON

Electrical Insulation

Spaulding — Fibre—Spauldite (Bakelite)
Rod—Sheet—Tube—Specialties
Complete shops at Los Angeles

•

Irvington — Varnished cambric—tapes
Cloths—papers—silks
Spaghetti tubing

•

Hope — Electric tapes and
Sleevings

•

Macallen — Mica for all
Purposes

•

Manning — Pressboard

Pacific Coast Stocks

C. D. LaMOREE

LOS ANGELES
1325 San Julian St.

SAN FRANCISCO
1889 Mission St.

DEPENDABLE TRANSFORMERS

1923

A Complete Line ... Standard or Special

Dry Type transformers, 50 Watts to 10 Kva. . . .
Special oil cooled transformers up to 100 Kva.
Heavy duty signal and bell-ringing transformers
"Universal Automatic" Coils and coil service
Portable Air Cooled Transformer . . . 110-Volt lighting from 220 or 440-Volt power circuits

Repair Service for . .
Distribution transformers—all makes and sizes
Auto-Starters and Starting-Compensators
Lifting Magnets . . . Solenoids of all types
Low voltage release coils
Overload relay coils
Constant current transformers
Battery chargers . . . Spot welders

JEFFRIES TRANSFORMER CO.
5706 Long Beach Avenue -:- Los Angeles, Calif.
In San Francisco Area
ELECTRIC AGENCIES, 2059 Webster St., Oakland

1933

JEFFRIES TRANSFORMERS

I'd rather have them think of me as small, than not to have them think of me at all

MANY electrical manufacturers, through lack of business, have been forced to curtail their activities . . . until now they again are classed as "small." Without money to buy full pages of advertising, they feel that small space will create the wrong impression on customers. So they don't advertise at all . . . and grow smaller.

It's no disgrace to be small, to use quarter- and half-pages in advertising. Small space now often is as effective as were full pages a short time ago. There is less competition; even the smallest ad is seen and read in today's thinner magazines.

If a quarter-page will let your customers know you still are in business and are out after business, it's a wise investment. It keeps them thinking about your company . . . and unless they *do* think about your company, there soon won't be any.

Prices that holler "VALUE!" so loud the whole country's going to listen!

ONCE in a lifetime you get a chance like this . . . a chance to swell your sales and clean up big.

That's what General Electric is laying right in your lap—with three Hotpoint Irons that you can now sell at the lowest prices in their history.

Who ever heard of a genuine Hotpoint A-C-Matic Iron for $4.95 . . . retail? Well, here it is, ready to turn your spring sales into a new sales high! And with it comes the Model "R", stepping down from $3.45 to $2.95. And the little 3-lb. Travel Iron follows suit, with a new price tag at $2.95.

A year ago you wouldn't have believed that these world's best irons could retail at such bargain prices. Yet these are the same Hotpoint Irons that sold so well at higher prices. Not a single feature has been eliminated to make these new low prices possible.

Of course, you know the added attractions of these irons: (1) The practically burnout-proof Calrod heating unit. (2) The patented General Electric Hotpoint thumb-rest. (3) The lustrous, mirror-bright Chromeplate finish. (4) The double button-nook feature, (except in the Travel Iron).

Add to these attractions the lowest prices in G-E history, and you have a combination that's hard to beat! So, get these irons on your counter . . . in your window . . . give the new low prices a good display . . . and watch the quick turnover! See your distributor at once . . . or write us.

THE A-C-MATIC
6-lb. Iron steps down from its old price of $5.95 to $4.95
THE MODEL "R"
comes sliding down from $3.45 to a new low price of $2.95
THE TRAVEL IRON
follows suit, with a new price tag at $2.95
De Luxe Travel Kit, $3.95

GENERAL ELECTRIC

Hotpoint

GENERAL ELECTRIC CO., MERCHANDISE DEPARTMENT, SECTION E-252, BRIDGEPORT, CONN.

PROFESSIONAL DIRECTORY

BYLLESBY
ENGINEERING & MANAGEMENT CORPORATION
Wholly-owned Subsidiary of Standard Gas and Electric Company
231 South LaSalle Street, Chicago
New York Pittsburgh San Francisco

ARTHUR R. KELLEY
CONSULTING ENGINEER
Reports and Valuations, Public Utility Industrial Properties
Edison Bldg. Los Angeles

ELECTRICAL TESTING LABORATORIES
Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory
80th St., and East End Ave., New York

Your card here builds favorable prestige for you. The cost is extremely small. The value is great as a business aid.

THE J. G. WHITE ENGINEERING CORPORATION
Engineers—Contractors
Oil Refineries and Pipe Lines, Steam and Water Power Plants, Transmission Systems, Hotels, Apartments, Office and Industrial Buildings, Railroads.
43 Exchange Place New York

In any line, a specialist does the best job.
Why not consult the firms listed here on your next undertaking?

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FILING SUPPLIES
OFFICE SUPPLIES

Electrical West is from the press of Neal, Stratford & Kerr

NEAL, STRATFORD & KERR
STATIONERS -:- PRINTERS -:- ENGRAVERS
San Francisco: 521 Market St. Oakland: 1629 Telegraph Ave.

Bound Volumes

FOUR BOUND VOLUMES, containing issues of Electrical West from January 1 to June 1, 1932, inclusive, may be purchased by calling at or writing to the office listed below. These volumes are half-bound in red leather, gold lettered, fully indexed. They are suitable for libraries, either private or company, and may be had for $7.50 each.

ELECTRICAL WEST
883 Mission Street . . . . San Francisco

Sell ELECTRIC COOKERY

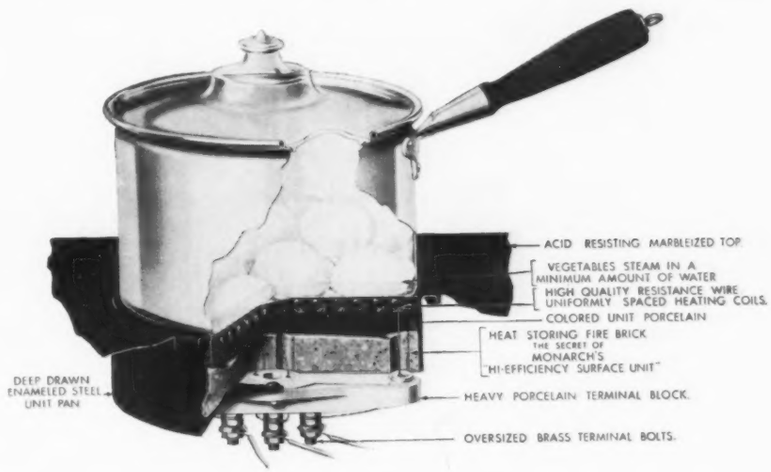
as an efficient modern method

providing both Speed and Economy with Exclusive Surface Unit Design

HOW does electric cookery compare with my present method—is it slower—is it more expensive?

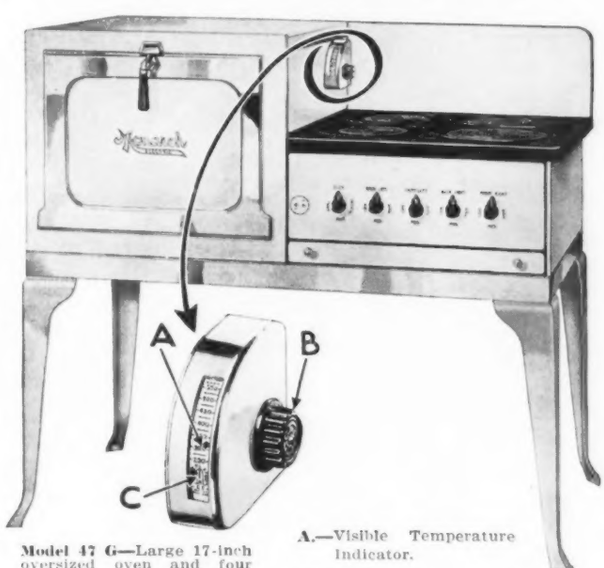
These two questions are uppermost in the minds of prospective purchasers and they offer a real opportunity for the Monarch dealer. Because, he can prove, beyond all question of doubt, that Monarch Electric Cookery is as fast and as economical as older methods—and provides many other outstanding advantages.

Continuous use in thousands of homes, and impartial laboratory tests have established the speed and remarkable economy of the Monarch Hi-Efficiency Surface Unit. Its scientific design and quality construction combines the advantages of others—the speed of the "open" type and the heat retaining properties of the "closed" unit, resulting in the utmost economy of time and of current, plus extreme durability and inexpensive replacement.


ACID RESISTING MARBLEIZED TOP
VEGETABLES STEAM IN A MINIMUM AMOUNT OF WATER
HIGH QUALITY RESISTANCE WIRE UNIFORMLY SPACED HEATING COILS
COLORED UNIT PORCELAIN
HEAT STORING FIRE BRICK THE SECRET OF MONARCH'S "HI-EFFICIENCY SURFACE UNIT"
DEEP DRAWN ENAMELED STEEL UNIT PAN
HEAVY PORCELAIN TERMINAL BLOCK
OVERSIZED BRASS TERMINAL BOLTS

Stress these principal points of the Monarch Hi-Efficiency Surface Unit:

1. Only genuine Nichrome wire, which withstands a temperature of 1700 F., is used. Even spacing distributes heat over entire surface and eliminates "hot-spots."



Model 47 G—Large 17-inch oversized oven and four surface units. Full white porcelain enamel with marbleized green acid resisting top. Available in Nile-Green or Ivory-Tan on special order.

A.—Visible Temperature Indicator.

B.—Automatic Oven Temperature Control.

C.—Illuminated Temperature Dial Strip.

2. Element is recessed in porcelain block of special refractory clay of extreme hardness and durability. Many bridges prevent wire buckling and contacting utensils. Four slots in porcelain provide for expansion.

3. Paramount insulating block, one inch thick, underneath porcelain block, prevents downward radiation and loss of heat and stores it for use after current is shut off. Liquids in a covered utensil will continue to boil from 15 to 25 minutes, due to this exclusive construction.

4. Both blocks (upper porcelain and Paramount insulating blocks) are encased in a heavy pressed steel pan, porcelain enameled inside and out, attractive in appearance and easily cleaned.

5. Monarch construction provides cool terminals and freedom from corroded and burned out wires. Connections to the supply wires are outside of unit pan and away from the heat. Only three wire connections per unit.

6. Monarch units are quickly and easily removed from top for cleaning. Holes in bottom of pan provide drainage.

7. The heating wire is extremely durable, yet replacement is inexpensive—a highly important consideration.

8. Unit bricks are green to harmonize with the green marbleized, acid resisting cooking top. Stains are scarcely noticeable and the color goes all the way through the brick.

Always take plenty of time to impress the prospect thoroughly with these distinct advantages of the Monarch Hi-Efficiency Surface Unit—and see how the sales resistance melts away.

Let us send you detailed information concerning the full line of Monarch Ranges.

MALLEABLE IRON RANGE CO.
3112 Lake St., Beaver Dam, Wisconsin

Central Station Representatives: ..... **Chamblin-Thomas Company, 639 Mission Street, San Francisco, California**
Dealer Representative: ..... **Glenn L. Brown, 3515 Kempton Place, Oakland, California**
Northwest Representative: ..... **G. A. Lieser, 1218 17th Avenue North, Seattle, Washington**

I want to build a house...

Some people are saying that <u>today</u>... although thousands of homes can be had for a song

WITH real estate prices what they are—there's really just one motive for building a home. And that is to build something better than the present day "bargain houses."

To get electrical contracts, the contractor must prove he has something better. And that is what Red Seal wiring certificates do for him this year more forcefully than ever.

During the months that follow, the Pacific Coast Electrical Bureau is backing Red Seal wiring in these four important ways:

1. Striking advertisements, addressed to the public and to contractors will tell prospective builders and buyers of homes how—by demanding the Red Seal certificate—they can be sure of an adequately wired house. And how Red Seal at only a few dollars greater cost promises a more ready resale at a better price.

2. Circulars distributed to practically all electric consumers in this state will sell Red Seal to thousands who some day expect to build or buy a new home.

3. Employees in the industry and prominent groups of people outside will get educational material, publicity, descriptive leaflets, etc., to acquaint them with the value and importance of Red Seal wiring.

4. Special help for the wiring contractor and appliance dealer. Merchandising material and sales helps; special events and campaigns planned.

Contractors:

Don't be content just to "get set" for the time when the pent-up building demand breaks loose. Go after the bids that open up now. And go after them on the basis that's fair to yourself and attractive to a quality minded buyer. Bid on the Red Seal basis.

Pacific Coast Electrical Bureau. A non-profit organization supported by the industry to serve the user of electricity. Write to 447 Sutter St. San Francisco, or M-15 Edison Building, Los Angeles, or 848 Roosevelt St., Fresno.

RED SEAL

The measure of an adequately wired house. A modern house! A more salable house!